



The magazine for AUSTRALIAN  
radio amateurs



Volume 73 No 8  
August 2005

# Amateur Radio

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incl GST

*As the going  
down of the sun  
and in the  
morning  
we will  
remember them*

## *Remembrance Day Contest*

### INSIDE:

Printed circuit boards  
— a simple approach

The experimenters'  
"Blob" board

2005: the year of DRM?

A dual band CW  
transceiver



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# Amateur Radio

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## Our Cover this month

The beautiful WIA Remembrance Day Contest trophy. The photograph was taken by Melissa Lau. The Contest will take place on August 13 and 14. Details can be found in the July edition of Amateur Radio.

### Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the National Office on receipt of a stamped self-addressed envelope.

### Back Issues

Back Issues are available directly from the WIA National

Office (until stocks are exhausted), at \$4.00 each (including postage within Australia) to members.

### Photostat copies

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus an additional \$2 for each additional issue in which the article appears).

### Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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## Editorial comment

Colwyn Low VK5UE

## Settling into Contest mode

The year has passed into the second half; winter is with us and this month we have the RD Contest. We can get the rig fired up and with the heat turned up in the shack and the coffee pot simmering we can settle into "Contest Mode" and contact some old friends and remember those who served in wars to keep us free.

The RD specifically remembers those who died in World War 2. This year has seen a major change in the rules and as we prepare for, participate in and finalise our logs for submission let us think what other changes might be made. Do we need to change the dedication of the contest and broaden it to all those who died in war? Do we still need to pit state against state? If not should we just run it as individuals and/or groups against each other? This is the WIA's major national contest so it is the Australian Amateurs who should finally decide how we run the contest. So please pass your views to the Remembrance Day Contest Manager, Chris Edmondson, VK4AA at the addresses in the Contest rules section 16 on page 44 on July AR.

I have been sorting out my gear for WICEN support of the Toyota Rally of SA on August 6/7. I never thought a system which "worked" last year could be so out of adjustment for this year's operations. Another case of check it all out as early as possible. By the time you read this I will either be saying TG or maybe using words I should not use in church!

This highlights one of the main things about emergency response groups; they have to be ready to roll when called, not two days later when they have got all the gear together. I am sure this is a lesson well learnt years ago on the eastern seaboard where floods and storms are more frequent and more severe than elsewhere in Australia.

I have been trying to tidy up the few projects I mentioned in previous editorials and find they all suffered a similar fate. I proved they worked but never did the final tidy up and screwed the lids on.

There is good news this month about the Foundation Licence. We should have it by the end of the year. This brings up a point of good manners. These new licencees may have got their licence in a way some of us thought too easy, but they got it. Given they are very much beginners, it is our job as experienced operators to be sympathetic to the new operators' problems and assist them to solve them. The new licencees will be learning more from experience after licensing than we "Old Fogies" had to but times are changing. The old guard should realise that things that were important in our theory exams are now outdated and things in the new syllabuses we will never learn or maybe only learn with difficulty.

So with that food for thought 73 and "Good Luck in the Contest"

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## August events:

### Remembrance Day Contest

13 & 14 August

### ALARA Contest

27 & 28 August

### Blue Mountains Winterfest

27 August



## Full ahead for the new amateur licence structure

We have all been concerned at the delay in the introduction of the new Foundation Licence and the changed privileges for the existing licences, particularly the Novice licences.

The WIA has been in constant contact with the ACMA in relation to the new licence structure, and has recently received sufficient clarification on some issues to enable the WIA Board to commit to the costs and resource involved in putting into effect the accredited assessor system that I have previously described, an essential step in the early issuance of the new Foundation Licence in particular.

In late May Dr Bob Horton, then Acting Chairman of the ACA, advised the WIA that the Authority would expedite the introduction of the new licensing arrangements by introducing the new Advanced, Standard and Foundation amateur licences first, with the other changes identified in the Outcomes of the Review of the Amateur Service being addressed subsequently.

However, in order for the new licences to come into effect, it is necessary to amend a number of legislative instruments including the Amateur Licence Conditions Determination and the Qualified Operators Determination. A Determination is subordinate legislation and has the force of law. Amendments to legislation are subject to very strict procedures including a requirement that they must be placed before Parliament and may be disallowed.

The amendments are in the process of being drafted by the specialist legislative draftsmen in the Attorney Generals Department. When this process is complete, the amending Determinations are submitted to the ACMA Board for its formal approval. The Determinations will come into force when registered on the Federal Register of Legislative Instruments. At this time the amending Determinations will be placed on the ACMA's website.

It is only when the Determinations are so amended that the ACMA will be able to issue certificates of proficiency to enable the issue of the new Foundation

and other licences.

The WIA is now satisfied that we can go ahead with accrediting assessors as I have previously described. We know that the ACMA will issue certificates of proficiency for the new licences on the basis of the submission of evidence of qualification by the WIA, in turn based on certification by WIA Assessors, all as described in the document "Assessment of Competency in Amateur Radio, March 2005" which can be found on the WIA website.

I believe that the process I have described will result in the first Foundation Certificates of Proficiency being able to be issued in September.

But it is not as simple as that.

To achieve this result it means that the WIA, the clubs and very many individuals must do a great deal in a very short time.

Mr Fred Swainston on behalf of a Registered Training Organisation (RTO) will conduct Amateur Radio Competency Assessment training on behalf of the WIA over a full weekend in each of Brisbane, Sydney, Melbourne and Adelaide. The weekend will be quite intensive, with the training being conducted from 8.30 am to 4 pm on each day.

Final dates and the venues for each training course will be announced very shortly.

Unfortunately only about 16 candidates nominated by WIA Affiliated Clubs can be accommodated at each course, and so in the ordinary course, only one candidate may be able to be accepted from each club for this initial training. It is desired to achieve as wide a geographical spread of accredited Assessors as possible, and if the number of potential candidates who would otherwise be accepted exceed the number of places, this will then be the criterion used to select candidates.

Candidates must hold either an Unrestricted, Intermediate or Limited amateur licence, and be a member of the WIA.

After successful completion of the accredited training course the candidates

will be qualified to apply for registration as an Approved WIA Assessor, and will then be able to assess candidates for the Foundation, Standard and Advanced amateur licences.

Through various state and regional representatives, the WIA has already started to contact clubs right across the country to finalise these arrangements.

Of course, if a club is not yet affiliated, we will be able to arrange affiliation very quickly indeed, once we receive the completed application for affiliation.

If any Affiliated Club is unable to meet all the costs involved in respect of the attendance of their nominated candidate, the club should contact the WIA secretary as we have set aside some funds for assisting clubs in such circumstances.

Of course, as is made clear in the Outcomes, the ACMA will be seeking to outsource the amateur examinations, and will therefore be going down the path leading to an open tender.

The WIA will, of course, be seeking to retain the right to conduct amateur examinations. We believe that no other organisation, with its Affiliated Clubs spread across the country can provide the service that we can.

Be that as it may be, the tender process necessarily means that whatever the ACMA does, it cannot be seen to endorse any potential candidate in the tender process.

That has caused the use of cautious language in even achieving sufficient assurance for the WIA Board to proceed as I have now outlined.

We now have that sufficient assurance, and it is now up to us, with the help of so many people and with the help of the clubs and their most qualified candidates to make the vision of a new licence structure, with a Foundation Licence attractive to a new group of amateurs, hopefully moving on to the new privileges of the Standard Licence, privileges immediately available to the existing Novice licencees, a reality – a new world of amateur radio in Australia.

## FCC proposes to drop Morse Code requirement for all licence classes

The ARRL reports that the US Federal Communications Commission (FCC) has proposed dropping the 5 WPM Morse code element as a requirement to obtain an Amateur Radio licence of any class. The Commission recommended the change to its Part 97 Amateur Service rules in a Notice of Proposed Rule Making (NPRM) in WT Docket 05-235. Any rule changes proposed in the NPRM would not become final until the FCC gathers additional public comments, formally adopts any changes to its rules and concludes the proceeding by issuing a

Report and Order (R&O) spelling out the changes and specifying an effective date. That's not likely to happen for several months.

## FCC declines other restructure proposals

In 2004, the ARRL filed a Petition for Rule Making asking the FCC to amend Part 97 to complete the Amateur Service restructuring begun in 1999 but "left unfinished." The ARRL called on the FCC to create a new entry-level licence, reduce the number of actual licence classes to three and drop the Morse code testing requirement for all classes except for Amateur Extra. The FCC declined in its NPRM to go forward with any other suggested changes to Amateur Service licensing rules or operating privileges beyond elimination of the Morse requirement.

## The Blue Mountains Radio Club Winterfest

The Blue Mountains Amateur Radio Club will be holding WINTERFEST on Saturday August 27 2005 at the 1st Blaxland Scout Hall, Reading Street Glenbrook NSW. Last year was a very successful event with over 100 attendees, including sellers. This year there will be an even larger number of sellers attending, including VK Cables, Action Communications (an authorised Benelec Dealer) and the Amateur Radio NSW Bookshop. Nepean Amateur Radio Group and Chifley Amateur Radio Club will also be attending. There will be a large number of private sellers participating in the car boot sale, which proved very popular last year.

## A Memorial Service for Geoff Taylor, VK5TY

Geoff passed away on June 21 while on holiday in Britain with his wife Christine, VK5CTY.

Geoff was aged 75, a Life Member of the WIA, a former Federal Councillor for SA and NT Division, he served as President of the SA & NT Division, he was also as a Commissioner for Scout Radio, he had been Site Coordinator for the refurbishing the Burly Griffin

Building, he was a WICEN Director and in his spare time ran an amateur radio school.

The service was held on Saturday, July 16 in the Unley Citizens Centre, Unley. Many were present and many tributes were paid to Geoff.

## June Fox retires from the WIA

WIA President, Michael Owen, VK3KI made the following statement on the retirement of June Fox on 1 July 2005:

"I am very sorry that June has retired, because to me June represented a continuity for the WIA, a resource of knowledge that is unsurpassed, and a devotion to an organization and its people that I have found amazing.

I know that I have said it many times, but let me say it again, for many of us June was the friendly cheerful voice on the phone who was the WIA.

When I became involved with the national WIA in May last year, I wondered how June would react. I knew that it would mean a great deal of extra work, the setting of new priorities and great change.

I can tell you that June was completely supportive, and did everything she could to assist the change and to make it a success.

The WIA is not a simple organization, but a very complex organization with many, many small tasks and exceptions to almost everything, and this was particularly so when the structure was federal and the office was meeting the needs of 7 different owners with 7 different requirements. That is why if it had all been written down I suspect the book would be very large and very complicated. That is why knowledge was so important.

That is why I very much regret June's retirement, though I am grateful that she will still be there to help us by sharing her knowledge.

For us all, and for myself, I would like to express our sincere thanks to June for her help, her courtesy and her cheerful contribution to amateur radio over the years."

### "Hey, Old Timer..."



If you have  
been licensed  
for more than 25 years  
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the  
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Old Timers Club  
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for an application form.

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# Printed circuit boards — *a simple approach*

Godfrey Williams VK5BGW

Reading Malcolm Haskard's (VK5BA) article "Simple Homebrew PCB Artwork" in AR July 2004 inspired me to see just how I could use my computer and its peripherals to improve the production of the occasional printed circuit board. I have tried all methods, photo sensitive board, clear transparency artwork and so on but always return to the "Trusty" direct etch pen method. This usually involves drawing out the component placement on a sheet of paper and then by working in "Mirror Mode" marking the holes to be drilled on the copper side of the board and usually getting lost and confused in the process. The same confusion applies when drawing the tracks and pads on the copper so the end result is a workable board that is usually flawed in some way. I don't get on well with the intricacies and secrets of the various computer programs available to produce PC board patterns, so some thought on the subject led me to the following method.

Figure 1 shows the component side of a board drawn twice size (May not be to scale here). This makes the drawing easier and improves accuracy, so all pin spaces, components etc will be multiplied in size by a factor of two. The pin-outs are marked by red pen to provide a clear drilling point. In this example a plastic template was used to draw the circular drilling points. Now scan the drawing at 50% magnification and after that operation is complete click on Image, select flip horizontal and then print. The result is the component and pin-out placements as viewed from the copper side of the board and at the actual size of the board required (Figure 2). You will find that the reduction in size is very accurate and furthermore any measurement errors in the original drawing are reduced by a factor of two. In this case the drilling points were reduced to about 1 mm for a nice sharp reference for accurate drilling.

Now here comes the "Clever Bit"! Carefully cut out the print and, using a non-water based glue, paste it to the copper side of the board. When dry, and using, say, a small screwdriver with its tip filed to a sharp point, punch all the holes to be drilled. A small hobby hammer or similar is more than adequate but give the punch a reasonable tap to insure that the drill bit will have a good start. Remove the paper and adhesive and drill the holes, afterwards scrubbing the board with steel wool to get rid of any traces of glue and also to remove any copper burrs. If the board is large, then one may have to resort to an actual size drawing, scanning at 100 % to suit the dimensions of the normal flat bed scanner. If the board is very small it

can be drawn at four times size and reduced by 25% when scanning. (Computer wise there is many a road to the "Clever Bit". Readers who find hand drawing tedious no doubt will find them or make good use of Malcolm's idea. Ed)

Now back to our original drawing. By referring to the circuit and using say a red marking pen draw in the connecting tracks as seen from the component side. Scan at 50 % and again choose image and flip horizontal and print. Now we have the components and pin-outs as before but including the tracks as seen from the copper side of the board (figure 3), making it a relatively easy copying exercise to draw in the pads and tracks with a direct etch pen. This scanning operation could be combined with the first but I prefer to do them separately as an aid to clarity.

Drawing with a direct etch pen is not difficult and with care and a good nib tracks narrow enough to pass between IC pins is achievable. The pen I use is "Action Marker fine line 33 Pc 901 blue" (DS Cat. N5181). This pen has a valve in it which is opened by pressing down on the nib allowing the ink to flow, the nib needs to be kept "wettish",

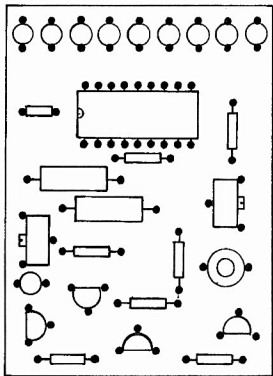


Figure 1

but not overly so to produce proper ink coverage. The copper side of the board needs to be bright and "Squeaky" clean otherwise the etching fluid will find its way under the ink and eat away at the copper we don't want removed. After a thorough scrubbing with steel wool use an abrasive household cleaner to render the copper absolutely free of grease etc. Rinse and dry and don't touch it with your fingers. When drawing the pads and tracks hold the board on the work surface with the sharp point we used

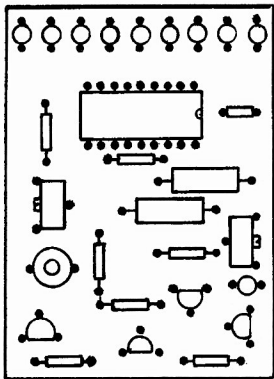


Figure 2

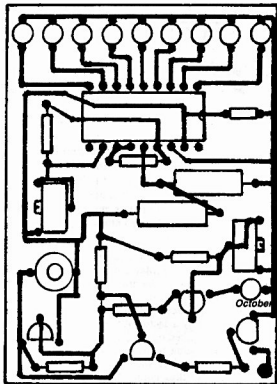


Figure 3

October 5/16 2

for punching the drill holes. Once the drawing is complete allow overnight drying before beginning the etching process. Should a board be large or complex and it not possible to complete the drawing in one go, the copper may become discoloured but as long as it is kept clean the ink will still adhere.

The etchant I prefer is ammonium persulphate (DS Cat N5654) as when mixed it is a clear liquid allowing one to see when the process is complete. As copper is etched away the liquid will take on a bluish tinge. I have seen it written that the direct etch pen ink is not suitable for this etchant but there is no truth in this. The mixture needs to be kept warm to hot and moderately agitated while the action is in progress. The mixture can be contained in a clear plastic open container (lunch box, etc) and kept floating in hot water. The board should be immersed in the etchant copper side up, a liquid depth of 20 mm is adequate. The first indication that the process has begun is a slight lightening of the copper colour. This indicates that it is gradually being eaten away, eventually becoming extremely thin. Then the process speeds up as the copper is seen to rapidly disappear

from the edges of the tracks until the etching is complete. It is important that the mixture be agitated continually and kept at a temperature that is just a little too hot to touch.

The direct etch pen method would probably be the least expensive method of producing one off boards but there is no reason that it could not be used for identical boards in moderate numbers. Producing a nicely drawn board can be satisfying and contributes more to the notion (I built it!). The board in question,

a nicad voltmeter with recycling circuitry, was drawn in twenty minutes. The scanned and reduced drawings can be saved on your computer's hard drive and retrieved for later use. The scanner used is a Canon. Note that other types may use different terminology to image or

flip horizontal. Since having this "Brainwave", I now have the images shown stored on my computer for retrieval whenever required. If a board is required all that I have to do in this case is print Figure 2 then glue, drill, clean, draw from Figure 3 and etch. This, I claim, would be cheaper and probably not much more time consuming than accessing the artwork, applying to and exposing photo sensitive board, developing, etching and drilling.

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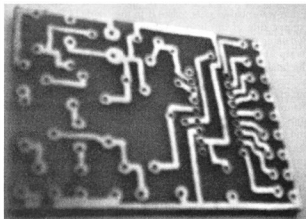


Photo 1

# The experimenters' "Blob" board

Drew Diamond VK3XU

When it is necessary to develop a circuit to requirements, a quick, cheap and effective method is to employ the good old "blob" technique. A 300 x 300 mm sheet of ordinary double- or single-sided circuit board is suggested as a dedicated "work-bench" for prototyping and experimental circuit work.

The lash-up pictured shows my 1.8 - 2.0 MHz receiver in the final stages of circuit development. The sub-assemblies are comprised of smaller scraps of circuit board, representing the perceived individual stages of the project. They may be soldered to the main board in several places with short lengths of tinned copper wire. Top left is the 1.8 - 2 MHz input band-pass filter. The deliciously messy board to the right of that is the mixer, AGC and audio section. The circuit board box near the centre is the finished VFO and phase splitter unit (in order to plan the remaining circuitry, it was necessary to build the VFO assembly properly in the first instance). The BFO is at the lower right.

When modelling a project in this way, we cannot assume that it will work entirely satisfactorily in the production model unless all stages are physically and electrically put together in close proximity upon a common "chassis". For instance, if a separate signal generator only were used to supply the VFO and/or BFO signals, it may be found that, when made as a unit and located near the main circuitry (thus sharing a common ground and supply rail(s)), spurious signals become a significant problem.

Similarly, when powered from (say) a stand-alone bench power supply, the circuit may work fine. Whereas, from a transformer-rectifier-regulator mounted

right there on the main board, hum and/or mains buzz (particularly with direct-conversion receivers) may be a problem. Hence, having got the circuit working properly using a bench supply, the intended "dedicated" mains supply components should be temporarily tacked to the board, just to be sure.

A combination of "ugly", point-to-point and 'paddyboard' may be applied. For circuits operating at RF, component lead lengths should be made reasonably short. A few spare IC paddyboard substrates fitted with sockets are handy for accommodating chips. When the entire assembly is operating satisfactorily, then it is easily possible to make a reasonable estimate of the circuit board and enclosure size(s) for a much tidier, and permanent, paddyboard (or similar) style construction for the production model.

## Related articles

1. "Build It Yourself From QST"; Hale, QST April - July 1992 (excellent series).
2. "How to Lay Out RF Circuits" I White G3SEK, RadCom February/March 1991.
3. "Manhattan-Style Building Techniques"; C Adams K7QO, Homebrewer #1 (journal of the American QRP Club - [www.amqrp.org](http://www.amqrp.org)), Summer, 2003, pp 20 - 23.
4. "'Paddyboard' Circuit Construction"; Diamond, Amateur Radio, February 1995.
5. "Building Successful 'Rat's Nests'"; A Pierson, Electronics Australia, March/April 1997.

ar

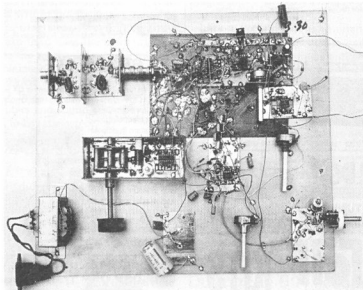


Photo 1. 1.8 - 2.0 MHz receiver in development

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Input Current: 230 milli Amps average  
Initial set time: Typical: Less than 2 seconds  
Recurrent set time: Typical: Less than 10 milliseconds  
Memory Capacity: 168 non-volatile locations  
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(3-60MHz) 100ft(1.8-60MHz)  
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Operating Temperature: -35 to +70 degrees C  
Size (approx): 22L x 16.5W x 8H cm  
Weight: 2.3Kilo  
Case Construction: Extruded Aluminum\*  
Cables, Connections: No cables supplied  
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DC Operating Range: +10.5 to 18 VDC  
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# 2005: the year of DRM?

## Is this the rebirth of shortwave broadcasting?

John Cartmill VK4BJ

Over the last decade or two, traditional listeners to shortwave broadcasts have been drifting to more reliable and higher quality local FM broadcasts or to the many satellite signals now available. 2005 could well see the beginning of the reversal of this trend. Reasonable cost consumer DRM receivers are due to be released into the market (European at least) in time for Christmas 2005. DRM, Digital Radio Mondiale (Digital Radio Worldwide) is the new, internationally recognised standard for digital short wave broadcasting. While there are competing standards for digital radio on MF and VHF bands, DRM is universally recognised as the only digital standard for HF. Already more than 60 broadcasters worldwide are using DRM.

Keen to fast track my understanding of DRM, I purchased a Ten Tech RX320D receiver and a copy of the DRM software. Essentially, the RX320D is a modified version of the RX320 and produces an additional IF output at 12 kHz that is within the frequency range of a computer sound card. The DRM software then uses the soundcard to decode the received data back into the programmes or services encoded into the DRM data stream. The computer I use is a DELL Inspiron 8100, but many other computers and sound cards have been found to be satisfactory.

### What does DRM sound like?

The first thing noticed is the delay before audio is heard after tuning into a new DRM station. A delay of ten to twenty seconds is typical while the receiver locks up to and decodes the incoming data stream.

The immediate observation on hearing live DRM on shortwave for the first time is the quietness of the signal. Gone is all the background noise traditionally associated with shortwave. On occasions, I have even heard the rustle of papers in the broadcast studio.

Almost as obvious is the absence of distortion, particularly that produced by selective fading.

Next is the improved frequency response of the audio with the use of high data rates and/or SRB (Spectral Bandwidth Replication).

And finally, sometimes more than one programme or service is available on the one transmission.

Late in 2004, DW conducted test transmissions with multi service broadcasts with up to four simultaneous independent audio services.

### So what have I heard in VK4?

During the A04 season Bonaire beamed signals to VK and ZL for an hour on Saturday and Sunday afternoons. This signal was not particularly reliable in Brisbane but I understand it was better in ZL.

Much better in Brisbane were their morning broadcasts to Europe. These transmissions were particularly regular and reliable.

### During the B04 season

**DW Trincomalee 21.675 MHz  
06:00 to 10:00 UTC.**

This is the most reliable daily signal at the time of writing. A low data rate of 11.6 kbps helps make this signal very robust and reliable.

On some evenings I have heard the

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four hour broadcast almost drop out free. This is very encouraging given that the signal is beamed from Sri Lanka towards Europe. Even at 11.6 kbps the programme is better quality than even the best analogue AM shortwave transmissions. There is, however, a slight low level "rasping" sound behind speech components of the programme (this is more obvious when listening with headphones.) I am unable to tell if this is due to the high DRM compression or to the combined effect of DRM and the compression on the satellite feed to Sri Lanka. Never-the-less, the resultant audio is very acceptable for shortwave.

An additional 80 bps text message gives station contact details.

### **VoR (Voice of Russia) Taldom 15.780MHz 07:00 – 10:00 UTC**

This signal is only available on occasions, perhaps two or three days per month. However, when conditions allow, the quality at 14.5 kbps is quite good. The improvement over 11.6 kbps is noticeable. On one particularly good evening I even used headphones so that I could more fully enjoy the quality of the music. This is not the usual reason for using headphones for shortwave reception!

Again the 80 bps text message gives station contact details.

### **DW Sines 17.700 MHz and 17.710 MHz.**

17.700 is difficult to receive in VK. A strong AM signal from RCI (Radio China International) on 17.690 prevents any decoding of this DRM transmission. Surprisingly, RCI seems to be using 7.5 kHz audio filtering on their signals rather than the more usual 5 kHz. As a result their upper sideband significantly overlaps the DRM channel.

17.710 MHz is usually free of interference for the first half hour (11:00 to 11:30 UTC).

DW have experimented on this frequency with multiple services. More commonly the signal is AAC SBR Parametric Stereo at 20.7 kbps. At this data rate, the signals are usually not decodable in VK. However, on some occasions, when conditions are just right, I have heard stereo for many minutes at a time with only occasional dropouts. Parametric Stereo sound very good; certainly not what one would

traditionally expect a shortwave signal to sound like. Without doubt, the computer audio and speaker system is the major limitation to the quality in my case.

## **Other stations**

MOI Kuwait on 13.620 MHz at 11.6 kbps can be heard some evenings in Arabic between 09:30 and 13:00 UTC.

## **How is the DRM signal transmitted?**

DRM is transmitted as Coded Orthogonal Frequency Division Multiplex (COFDM).

In this way DRM transmissions have much in common with Digital Audio Broadcasts (DAB) and Digital Video Broadcasts (DVB). Each of these formats uses a form of COFDM which is optimised for the peculiarities of the particular use.

The higher DRM data rate transmissions can use more than 200 independent carriers within the normal 10 kHz channel bandwidth.

These carriers are amplitude and phase modulated to produce a constellation of data symbols. 4QAM (Quadrature Amplitude Modulation), 16QAM and 64QAM are used depending on the robustness needed for that portion of the DRM signal.

Many tests were conducted during the development phase of DRM so that modifications to the specification now ensure DRM is best able to handle the high Bit Error Rates (BER) to be expected in a HF radio channel.

## **The DRM signal has three main components.**

The FAC (Fast Access Channel) is a low data rate but highly robust part of the signal that allows the receiver to establish initial lock. Next, the robust SDC (Service Description Channel) gives information on the number and type of services contained in the particular DRM signal. The MSC (Main Service Channel) contains the data for the programmes or services transmitted at that time.

Some of the carriers in the DRM constellation are "reference cells" which provide amplitude and frequency references for the receiver locking.

## **Within the DRM specification there are four different robust modes.**

Within each mode, the broadcaster has a further choice of data rate. In this way, the broadcaster has a large range of choices which trade data rate (quality) for robustness.

Mode A is suitable for ground wave services such as those on the normal MF band.

Mode B is the first choice of skywave broadcasters such as International Shortwave.

Mode C is for more difficult DX HF.

Mode D is suitable for paths with high multi-path and Doppler shift as occurs with NVIS (Near Vertical Incidence Skywave). NVIS is used in the "Tropical Broadcast Bands" at 2, 3 and 5 MHz (2.3 – 2.5, 3.2 – 3.4, and 4.75 – 5.05 MHz).

To date I have seen one transmission in Mode C. All others have been in Mode B.

## **How is the Audio encoded?**

There are three methods used for encoding audio.

AAC, Advanced Audio Coding (part of the MPEG4 specification) is used for music programmes like the radio programmes we are all familiar with. Data rates from 11.6 kbps to 24 kbps are used depending on the quality/robustness choice made by the broadcaster.

SBR, Spectral Bandwidth Replication, can be added to roughly double the perceived audio bandwidth of the programme. To reduce the data rate, the audio bandwidth of a music programme may be reduced to, say, 6 kHz only. SBR can be used to restore the lost bandwidth at a cost of around 2.5 kbps. The SBR analyses the original programme and develops a "helper" signal related to the lost high frequency information. The receiver uses this helper information to generate narrow band noise that is appropriately related to the harmonics that would otherwise be missing from the received signal. The result is quite convincing.

Parametric Stereo can be achieved with additional "helper" style information which enables the receiver to generate an "acceptable stereo ambience". Again

the data rate cost is around 2.5 kbps.

80 bps of the AAC service can be used for a small text message service. Text messages are limited to 128 characters which, from my observations, can be updated every 30 seconds or so.

CELP (Code Excited Linear Prediction) and HVXC (Harmonic Vector eXcitation Coding) are used to encode speech only services. High quality audio using CELP requires about 8 kbps. Telephone/communications quality audio using HVXC can be achieved at around 3.5 kbps. Again SBR can be added to CELP and HVXC to further improve the apparent audio bandwidth.

In addition to the text messages, the DRM specification also allows for the transmission of non audio services such as multi-media, data files, html pages, etc. I have not yet seen any data transmissions.

## Can current transmitters be converted?

After generation at low power level, the DRM signal needs to be amplified in a linear way so as to preserve the amplitude and phase of the constellation symbols. Fortunately, this can be achieved without prohibitively expensive modifications to many high power AM HF transmitters.

To broadcast a DRM signal, the phase component of the signal is generated in the new DRM exciter. The phase component is inserted into the RF input of the transmitter where the frequency synthesizer would normally connect. It is actually a phase modulated RF signal at the assigned frequency of the transmitter.

The amplitude component is fed to the existing modulator, which needs to be modified for increased audio bandwidth so that it can handle the digital nature of the DRM waveform. But the main requirement is that the AM modulator must have a DC connection to the anode of the modulated RF amplifier (the old Class B Modulator with large transformer is unsuitable.)

Most modern high power HF transmitters, however, use a step switch method of anode modulation. Basically, this consists of 48 power supplies of around 700 volts each which are switched in series as required to supply the instantaneous plate voltage needed to produce the modulated output signal. For an un-modulated carrier, half the

power supply modules are connected at any one time. When an increase or decrease in instantaneous anode voltage is needed, the appropriate number of modules is switched in and out of circuit. If a reduction of anode voltage is required, a commutating action ensures that the module last turned on, stays on, and a module that has been on for some time is the one switched off. This commutating system continues even for an un-modulated carrier.

A 100 kW AM transmitter produces a peak output power of 400 kW when fully modulated. The peak to average ratio of the DRM signal, with its many carriers, is more like 10 dB so that a 100 kW AM transmitter can produce at best, 40 kW of DRM. Typically, 100 kW AM transmitters seem to be operated at 30 – 40 kW when in DRM mode. If the transmitter is unable to handle the necessary peak output, then compression of some of the constellation symbols will occur, distorting the signal and increasing the Bit Error Rate.

Typically, high power broadcast transmitters use plate modulation only. To further improve the linearity of the amplitude modulated component, screen modulation is added as part of the DRM conversion package. Remember, plate AND screen modulation was common practice in the old AM days of amateur radio.

Offsetting this additional complication and cost is the fact that DRM does not

need the same power level as AM (half or less) for the same coverage. For the broadcaster, the reduction in their power bill is very welcome.

International DRM broadcasts from Europe seem to range between 30 and 200 kW.

There are reports that Radio New Zealand has ordered a number of Thales DRM capable transmitters. These will be used in their shortwave service to improve the quality of the programme fed to their many South Pacific Islander re-broadcasters.

## Are there special requirements of the DRM receiver?

The performance requirements of a DRM receiver are not beyond those currently available in many medium to high end HF receivers.

Low phase noise is essential, so receivers need to be crystal locked or use a quality synthesiser. The IF bandwidth must also be sufficiently wide to avoid distortion, particularly of the edge-of-band carriers. DRM can operate in several bandwidths from 4.5 kHz to 20 kHz.

DRM "receivers" currently available produce an IF of 12 kHz which is fed to the sound card of a suitable computer for decoding using either the official DRM software (about \$AUS110) or the freeware DReAM software.

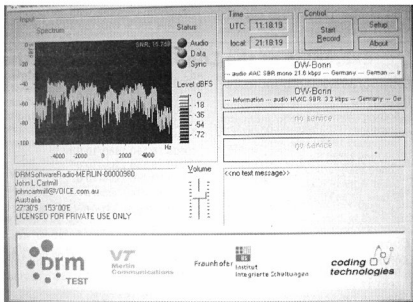


Photo 1

# Decoding software

I have used the official DRM software as the "fast track" approach to receiving DRM.

DReaM software needs to be downloaded and compiled using C++. Although I have recently heard reports of compiled versions being available - the legality of these copies would need to be checked. DReaM has some additional sophisticated analysis tools, and can generate a test DRM signal for checking receivers, but requires a computer with a faster CPU. The minimum CPU speed needed is probably around 500 or 700 MHz, so that should not be a serious problem with today's GHz CPUs.

I have not had any experience with the DReaM software, but the official software works quite well.

The DRM software "drives" very nicely and I had no problems setting it up. The spectral display of the signal is very handy and can be used on AM signal as well. With a little experience it is possible to estimate very quickly if the signal is likely to be de-coded. Three lock LEDs indicate when sync, data and audio lock are achieved. The level indicator is essential for setting the input level to the sound card. I have noticed that, if the red overload LED lights, the signal has already overloaded the sound card and DRM sync will be lost.

Once data lock is achieved and the SDC channel decoded, a basic description of each service is displayed in the service blocks located on the right of the display. The required service is selected by clicking on that service box.

An active service changes the display background to white. The service block of any service not being transmitted is left greyed out and "no service" displayed.

A record button allows a data analysis of the signal to be saved into a data file for later analysis. An additional programme, not part of the official DRM suite, allows this data to be displayed in graphical format.

At the time of writing there is a fire-sale of the official DRM software at about \$AUS70.

This will continue for a short time and then be discontinued. As a bonus, a copy of DReaM software is also included at no additional cost.

## Antennas

As with all shortwave listening, the antenna is critical.

At this stage I have had limited opportunity to experiment with antennas. However, I have noticed that a half-wave vertical dipole cut for around 21 MHz often outperforms any other antenna that I have. I am wondering if the lower angle of radiation frequently attributed to vertical antennas produces a more stable signal, which helps the decoding software.

Many European listeners seem to be using magnetic loop antennas. I suspect this is due to space limitations. One comparison has been made between a commercial magnetic loop and a 20 metre amateur Yagi. A signal that was virtually un-copyable with the magnetic loop was 100% with the 20 metre Yagi.

Well, I guess that means we don't have to re-write all the antenna handbooks.

Commercial receivers are promised for the European market at least in time for Christmas 2005. However, the lack of an available chip set for these receivers had caused some to doubt this target date and even the future of DRM itself. In January 2005 a joint press release by DRM and Texas Instruments announced that TI has committed to the development of a DRM decoding chipset. TI already produces chipsets for DAB receivers so the addition of DRM is seen as a natural extension. It seems that the last remaining hurdle that could have prevented the deployment of consumer DRM has now been removed.

## Amateur radio and DRM

Whenever there is a new technical development, amateur radio operators are not far away. Already there is a HamDream system under development. I have not had time as yet to search for much information on HamDream which I understand is still somewhat "under development". However, I believe that quite reasonable HamDream transmissions have been made within the bandwidth of a typical SSB transmitter. So it will be interesting to see how this develops.

## Is there a future for SWling in the DRM age?

Given that digital transmissions are either perfect or totally absent, will there

### Examples of the Log Files created by the DRM Software

#### DRMSoftwareRadio-MERLIN-00000980

Software Version 2.0.34  
Starttime (UTC) 2004-09-07 06:37:41  
Frequency 15780 kHz  
Latitude 27°30'S  
Longitude 153°00'E  
Label Voice of Russia  
Bitrate 17.38 kbps  
Mode B  
Bandwidth 10 kHz

#### Comment

MINUTE SNR SYNC AUDIO TYPE  
0000 16 150 1410/10 0  
0001 17 150 1470/10 0  
0002 18 150 1480/10 0  
0003 15 150 1150/10 0

0004 15 149 1290/10 0  
0005 15 142 1050/10 0  
0006 15 150 1120/10 0  
0007 13 150 640/10 0  
0008 14 149 1230/10 0  
0009 18 150 1480/10 0  
0010 19 150 1500/10 0  
0011 19 150 1450/10 0  
SNR min: 0.0, max: 20.1

#### DRMSoftwareRadio-MERLIN-00000980

Software Version 2.0.34  
Starttime (UTC) 2004-09-07 09:24:35  
Frequency 21675 kHz  
Latitude 27°30'S  
Longitude 153°00'E  
Label DW DRM

Bitrate 11.56 kbps  
Mode B  
Bandwidth 10 kHz

#### Comment

MINUTE SNR SYNC AUDIO TYPE  
0000 0 0 0/00 0  
0000 15 150 745/05 0  
0001 16 150 750/05 0  
0002 17 150 750/05 0  
0003 16 150 750/05 0  
0004 17 150 750/05 0  
0005 17 150 750/05 0  
0006 15 149 745/05 0  
0007 16 150 745/05 0  
0008 17 150 750/05 0  
SNR min: 12.5, max: 19.5



# Post Script update to DRM

Since writing this article earlier in the year, we have moved into the AO5 Broadcasting Season. As a result, several frequencies and times have changed.

During the late afternoon and early evening the only signal now is DW from Trincomalee on 21.675, although I have heard VoR from Taldom near Moscow on a few occasions early in AO5. A better time for listening now seems to be the early hours of the morning. The DW 15.435 MHz transmission on 2nd May was the best DRM signal I have ever received. DREAM software reported a SNR up to 25 dB. I have been told that this is the about the limit of the TenTec Receiver, so the actual signal may have been even better. Classical music with an audio bandwidth of 12 kHz was received virtually drop out free for more than half an hour before I had to leave the shack. Almost 100% of audio frames were decoded correctly.

It is also worth checking 7265 kHz around 0600 UTC. This is an example of two services on the one DRM signal.

Latest DRM transmission times and frequencies are available at <http://www.drm-dx.de>

Yes, I have received a copy of the DREAM software and I find that I am now using it in preference to the official DRM software. The difference in performance is very little, but DREAM gives a number of additional readouts which are very helpful in understanding DRM. The SNRs of the 200 or so individual carriers can be viewed graphically; as can the impulse response and a "vector scope" style display of the FAC, SDC and MSC symbols.

The official DRM software is now available from <http://www.winradio.com/home/download-drm.htm>

The price has also been reduced to approx \$US 50.

An updated version of the DRM software is reportedly due for release in a couple of months. This version will include a CELP decoder for low bit rate

speech channels.

DRM chip development is proceeding at a pace. Texas Instruments and Radioscape have announced the release of a complete receiver chipset which will decode both DAB and DRM. The chip sets are currently available in small quantity (up to 1,000) for evaluation. Full supply is promised for later this year.

Some 5 or 6 other chip manufacturers are reportedly planning to release competing products. This level of competition should help to bring prices down quickly.

Commercial DRM receivers are on target for a European release about October/November this year, priced around \$US 250.

Radio New Zealand have announced the purchase of two new Thales DRM transmitters. DRM broadcasts are planned to commence in January 2006 with tests as early as October or November this year. RNZ are currently looking for SWLs in the Pacific area who will become official DRM monitors for them. As an inducement, they are offering free DRM receivers.

The DRM consortium has announced that the DRM standard will be updated to include broadcasts up to 120 MHz. It could be 2007 or 2010 before this is implemented. However this is a strong indication of the position DRM will be taking in the Digital Broadcasting arena.

With so many developments in the last few months, it is clear that DRM is really "going places". Indeed history might well record that it was this decade, and 2005 in particular, that saw the rebirth of Shortwave broadcasting.

Happy DRMIing

John VK4BJ

be any challenge in short wave listening in the DRM age? My expectation is that SWling will continue as strongly as in the past. Certainly, ionospheric propagation will continue to be as fickle as ever and reception of marginal DRM signals can be very significantly influenced by the antenna used. My guess is that there will still be plenty to stimulate the imagination and enthusiasm of DRM listeners for some time to come.

## Latest developments

At the time of writing, The DRM consortium has just voted to extend the specifications of DRM to include frequencies up to 120 MHz.

In March 2005, DW conducted tests with "slideshow" pictures. I have been absent overseas so I have not had the opportunity to view these.

## Thanks

My thanks to Dr John Stanley K4ERO for his many suggestions and corrections to the draft of this article.

## For further reading

"Trying to receive the digital (DRM) broadcasts", Brian Tideman VK3BCZ, *Amateur Radio* July 2004

Official DRM home page [www.DRM.org](http://www.DRM.org)

"DRM receiver project" [www.DRMrx.org](http://www.DRMrx.org)

<http://owdjim.gen.nz/chris/radio/> DRM contains many DRM reception reports and audio files

South African Radio League Download source for "Ham Dream" [www.sarl.org.za](http://www.sarl.org.za)

"Digital Voice: An Update and Forecast", Doug Smith KF6DX QST Feb 2002

"The how and why of COFDM", J H Stott, BBC Research and Development, *EBU Technical Review* - Winter 1998

"DRM - key technical features", Jonathan Stott, BBC Research and Development, *EBU Technical Review* - March 2001

DRM Lecture Notes by John Stanley, <http://home.att.net/~drmllectures/>

ar

# OzSpid antenna rotator

## (Review and report)

Kevin D Peacock VK4KKD

Firstly a little background on how the OzSpid found its way to Australia.

Several years ago a fellow ham contacted me about a rotator being sold in Canada. Harris (then VK4CWT) made particular mention of the style of the rotator. The drive motor was mounted externally and it had reminded him of the way I had devised an electric motor drive for the winches on my "One Man Towers".

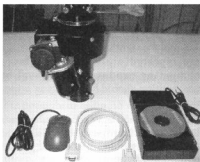


Photo 1. The complete package. The OzSpid Heavy Duty rotator comes with control box, computer interface and software. The Spid "mouse" is an OPTIONAL EXTRA, well worth buying as it allows the control box to be set out of the way and the rotator controlled using either the direct input of clockwise/anti-clockwise with the right and left top buttons. OR you can set up to six presets (in six memories), which can be called up using the six side buttons on the mouse body.

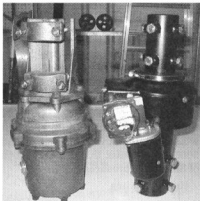


Photo 2. The working end of the OzSpid is very close in size to the working end of the Emotor 1200 FXX. That is until you come to your radio desk.

Included with his letter was a photograph of the rotator. My first impression was "ugh, how ugly!" After a cursory and half-hearted look at the unit, I thought no more about it.

That is until Bob (VK4MR) contacted me after he returned from one of his trips to the US "Hamfest" at Dayton Ohio.

Bob mentioned a rotator that he had seen being sold there. And he spoke about the way the Canadian amateurs who were selling it had set up a comprehensive test, pitting their rotator against all of the big name rotators that most of us are familiar with.

Their endeavours at Dayton are another story, one which will become part of the many legends that are the history of Ham

Radio. The way their rotator performed sparked more than casual interest among those who witnessed the test.

The glowing terms used by VK4MR were enough to set in motion a series of events which were to end with this fantastic little rotator becoming part of the inventory of Australian Enterprise Industrial.

As many would be aware, Australian Enterprise Industrial is a small business primarily producing the "One Man Tower".

This tower is an Australian

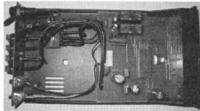


Photo 5. The inside of the control box is well laid out with plenty of room for the components. Examination showed the soldering to be of a high standard on the several randomly selected control boxes that I removed the covers from. None of the "slapped on with a shovel" soldering that I have found in some of the other brands which now seem to mostly come from the cheap labour regions where the people doing the soldering have little or no idea of just what they are supposed to be doing.

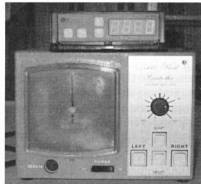


Photo 3. Here is where size does matter. The fantastic little digital readout of the OzSpid was a bit "different" at first. But within a few minutes I had become used to it and realised the advantages of such a system.



Photo 4. Connecting the unit is super simple. Only four wires are required and the units are clearly labeled. Two wires are for powering the motor and the other two are impulse carries. An operator's manual is included on the software CD and it should be printed out and read.

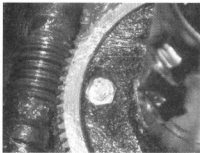


Photo 6. No puny little alloy or plastic gears in here, folks. Solid machine cut steel worm drive and pinion. The strength built in here is way beyond what other manufacturers are offering. No wonder it tips the scales at 8kg!

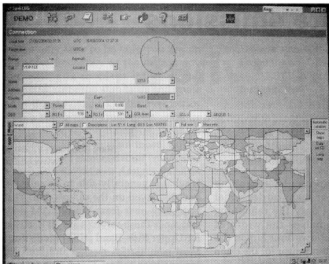


Photo 7. A screen shot of one of the displays that those who choose to remotely control their OzSpid rotator will see. A world map on which the operator simply double clicks a location and the rotator turns the antenna to that direction. There are many options available in the software. Nothing complicated. And it does not take a University degree to set it up or use.

invention which has been making hobby communications, and indeed the commercial communications industry, safe and more "user friendly" for some 20 years.

With an eye for strength, I was very impressed at the strength of this ugly little black rotator, which had made such an impression on my long time friend. But I was to soon be even more impressed.

I contacted the chaps in Canada, they referred me on to the manufacturer. Discussions led to the importation of an eagerly awaited shipment of the rotators to Australia.

I intended to give one or more of these rotators what I can only describe as "the Aussie test", I earmarked one Azimuth only unit and one Azimuth/Elevation combination unit for my test bench.

"Strewth, it's heavy for its size" was my impression on taking it out of the box (8kg - compared to say an Emotator 1200FFX which weighs 6kg and understandably as The Spid has tubes for mounting to pipes top and bottom while the Emotator had pipe clamps top only)

This is not some pot metal glitz and glamour machine. Constructed in steel with a massive steel worm gear drive, the mounting system is two steel tubes, one top and one bottom with eight centering/locking bolts in each.

It comes with neat, compact little boxes which house the electronics. I was pleasantly surprised with them, as I had become used to the large control boxes of the various other brands of rotators.

Then I discovered the CD. Never having been one to "read the flamin' instructions", I inserted the CD and installed the software. I sat there pushing buttons and waiting for things to happen. For the first time I found myself at the control of a rotator through my PC. But I have put the cart before the horse a bit here and should backtrack because it was not as simple as I made it sound.

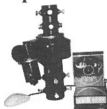
With one rotator and a control box on the test bench I printed out the "owners manual" from the CD. And this is the first thing I should have done.

After reading the manual I saw how the designer and builder of these rotators had employed the "KISS" principal. This endeared him to me, as it was my personal objective when I designed, and later refined, the design of the "One Man Tower". KEEP IT STRONG AND SIMPLE STUPID! Works every time.

Simple? You bet. Four wires connected control box to the rotator. The control box uses 12 V dc. You can't get much simpler than that. Or can you?

The hardest choice I had was 'how would I control the rotator?' Would I use the optional mouse? Would I direct input control using the push buttons on

## OzSpid Rotators



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the control box front panel? Or would I go to remote control using my PC? Faced with such a diverse selection of control choices I was like a kid in a candy store.

Price for the OzSpid Heavy Duty rotator is just AUD\$990 (inc. GST).

The optional mouse is just AUD\$38.50 (inc. GST)

## Where do you get it?

Contact Kev. at Australian Enterprise Industrial. (see ad this page)

Or on the internet email [acitower@ihug.com.au](mailto:acitower@ihug.com.au) <http://homepages.ihug.com.au/~acitower/index>

ar

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# PACTOR and other data emissions

## Understanding what frequency you are on

Marc Robinson VK2BUA  
 www.pca.cc

Following the recent approval of PACTOR data modes for use by Australian amateur stations, it is perhaps timely to explain how to get onto the correct frequency to call say, a silently scanning Winlink station.

In the world of AM/FM radio, setting a transceiver on frequency is simply a case of: "read the frequency out of the book and dial it up on the radio." The resultant transmission sits symmetrically on the quoted radio carrier frequency and that is that. However, with Single Side-Band (SSB) mode, things get more complicated. SSB is generated by generating an AM signal with its two mirror imaged Upper and Lower

Side-Band components, removing one along with the main carrier signal and transmitting only the remaining side-band. This halves the width of the signal and allows four times the effective transmitter power for the same transmitter power consumption.

While this is all very efficient, how do you tell someone what frequency you are on if you have chopped the signal in two, thrown away one or other half and killed (suppressed) the carrier it rode on? Commercial aviation, marine and like services traditionally keep it simply and quote the non-existent Suppressed Carrier Frequency (SCF) when listing Voice Service Frequencies because that

is what is generally able to be selected and displayed on the radio's dial. This is a carry over from the old AM days and since these services are all licensed for Upper Side-Band (USB) mode only. Most commercial marine and land HF transceivers reflect this by providing only USB mode.

On the other hand, military, CB and amateur radio services have more latitude and radios made for these services provide LSB, AM and USB mode selection which creates havoc in the hands of untrained operators. Publishing or establishing the radio frequency of a data transmission is a lot harder because the tone frequencies generated by the

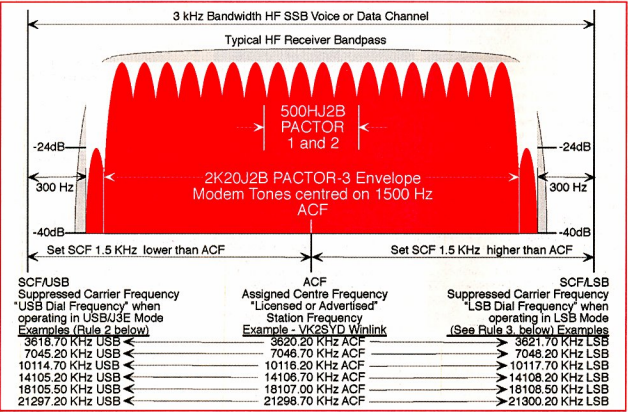


Figure 1

data modem to modulate your SSB transceiver also affect the transmitted frequency.

The only way to be sure you are on the same frequency as the station you are calling is to adopt international licensing authority standards and quote only the Assigned Centre Frequency (ACF). This is the frequency of the centre of signal envelope being transmitted. The frequency of modem tones, carrier frequency and sideband must be selected to achieve the correct Assigned Centre Frequency.

Fig 1 shows a picture of a PACTOR-3 signal envelope showing the relationship between the Assigned Centre Frequency, USB/LSB mode selection and the Suppressed Carrier Frequency that must be set. Also shown is the narrower 500 Hz bandwidth occupied when using the older and slower PACTOR-1/2 modes.

## Rules for PACTOR Data Operation

1. Always use the Assigned Centre Frequency (ACF) to list or describe a PACTOR data radio channel frequency.
2. Subtract 1.5 KHz from the ACF when programming or setting the "Dial Frequency" on the Radio in USB Mode.
3. Hams can choose to add 1.5 KHz and use LSB mode if they find it easier due to their radio's default modes.
4. PTC Modem Tones must be set to centre on 1500 Hz (1.5 KHz) so receiver bandwidth accommodates signal.
5. All the above settings also work for older data modes including PACTOR 1 & 2, SITOR, AMTOR and Packet.

6. It is essential to set the PTC modem FSK & PSK levels so as not to override the transmitter (another subject).

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# A dual band CW transceiver

## Part 1

Dale Hughes VK2DSH  
PO Box 7430, Sutton, NSW 2620

Direct conversion receivers have been around for many years. Such receivers have the advantage of simplicity and are capable of high performance if carefully designed and constructed. Interest has re-emerged in using phasing methods instead of crystal filters to reject unwanted sidebands. Phasing methods of sideband rejection can be used at any frequency instead of a limited range of frequencies for which precision filters are available. New mixer designs have appeared that offer high performance at low cost and low noise high gain audio amplifiers are available which simplify phasing system design.

Morse code has been with us since the dawn of electrical method of communication; it has the virtue of providing reliable contacts in poor conditions. Also, simple circuits can be used to build transmitters. Modern semiconductor technology has provided us with a multitude of new devices with which we can create high performance receivers and transmitters.

All of the above make it a perfect time for us to experiment with radio technology, and this article describes the design and construction of a low power CW transceiver which has the following features:

- Frequency agility and stability by means of Direct Digital Synthesis (DDS) technology. Frequency resolution is adjustable in decade steps from 1 Hz to 10 MHz.

- Transmit output power is approximately 2.5 watts into 50 ohms. Local side tone is provided when in the transmit mode.
- Direct conversion receiver with unwanted sideband rejection.
- Ability to operate on split frequencies, and selectable receive frequency offset.
- Inbuilt keyer for use with 'bug' type keys, straight keys can also be used.
- Minimum number of controls: a keypad, display, volume control and 'Press to transmit' switch (PTT).

This article is in two parts, the first covers the overall description, digital circuitry and transmitter, the second part covers the receiver, adjustments and concluding comments.

## Circuit description

The block diagram (figure 2) shows the main parts of the unit, and how each block interconnects with the other modules. Provision has been made to allow the addition of an external power amplifier. The connections from the transmit/receive relay on the transmitter board are brought out through connectors so that the receiver input can be placed on the antenna side of an external transmitter power amplifier if required.

Not shown explicitly are the power supplies to each part of the unit. The completed unit runs from a 12 volt sealed lead acid battery. Positive and negative 5 volt supplies are generated using a pair of small DC-DC converters removed from junked equipment. Current consumption is 310 mA on receive (depending on attenuator settings) and 680 mA on transmit.

Note that, in the following descriptions, component numbering on the schematic diagrams relates to the individual modules.

## CPU & DDS module

The heart of the system is the CPU & DDS module (see figure 3). This unit performs the following functions:

- Generates the RF carrier at twice the selected receive and transmit frequency.
- Controls the transmit/receive switching and transmit keying.
- Acts as the dot and dash generator when the 'bug' mode is selected.
- Controls the receiver input attenuator.
- Allows the operator to customise various aspects of the unit to suit

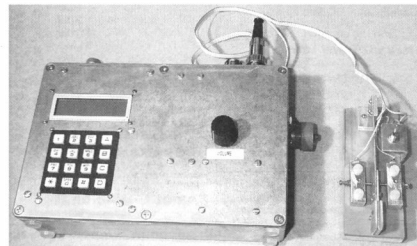


Figure 1: The transceiver and a homemade 'bug' type key which is used with the inbuilt keyer.

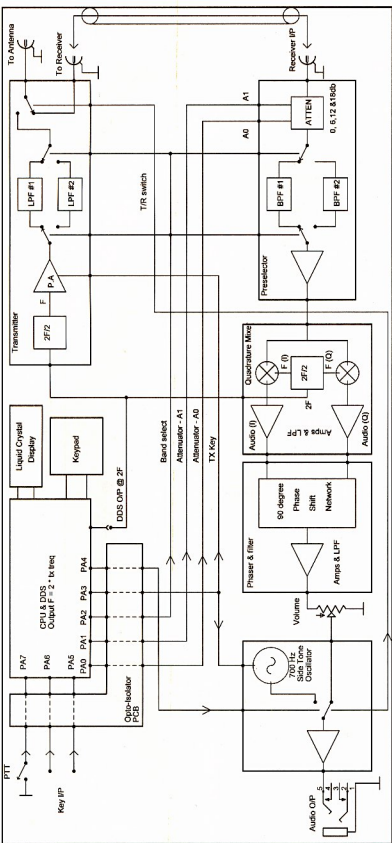


Figure 2: Block diagram of the transceiver.

individual needs.

- Sets transmit band limits to prevent inadvertent out-of-band transmissions.
- Sets the receive frequency offset to adjust the 'beat' note of the received transmission.

The CPU is an Atmel AT90S8535 device and the DDS chip is an Analog Devices AD9851 Device. The DDS chip is clocked by a 30 MHz oscillator which is multiplied internally by the DDS chip to generate a 180 MHz clock which is used to generate the RF output. A sine wave output is available from the DDS chip, but in this case the sine wave is passed through a 70 MHz low-pass filter and then squared by the internal Schmidt trigger to generate logic level signals which are passed to the transmit and receive circuits. The DDS and associated filter are all surface mounted components, thus no winding information is given for the 70 MHz filter. Note that the RF output from the DDS unit is at twice the set frequency and is divided by two on the receiver and transmitter circuit boards. This simplifies the generation of anti-phase signals that are required for the transmitter and the quadrature phase signals required by the receiver mixers.

Transmit and receive frequencies are set from the keypad and a two line liquid crystal display (LCD) shows frequency and attenuator settings when in normal use. Various options can be easily set by scrolling through options on the LCD; the most commonly required settings are shown first, followed by less frequently accessed settings.

The CPU chip has the facility to be programmed in-situ and this allows the CPU software to be upgraded as operational needs change.

All input/output lines between the CPU module and the rest of the transceiver are connected by optical isolators and are filtered to prevent noise from the high speed digital circuitry interfering with the operation of the transceiver. Particular attention must be paid to filtering, screening and supply decoupling of high speed digital signals to reduce the possibility of internally generated spurious signals. The prototype uses multiple layers of conductive screens and all non-RF connections are passed via feed-through capacitors. Local oscillator output from



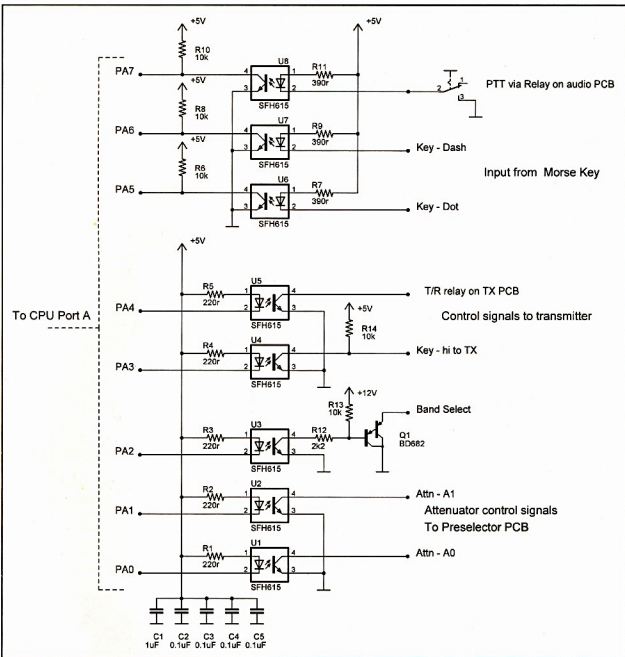


Figure 4: The optical-isolator module.

the DDS to the receiver and transmitter is via miniature coaxial cable.

The optical-isolator (figure 4) module consists of eight couplers; three accept signals from external sources (PTT, dot and dash signals) and the other five control various aspects of the units operations (attenuator, band select, TR control). Each coupler is capable of sinking 20 mA of current and Q1 boosts the ability of coupler U3 to switch the

four band select relays which switch the low-pass and band-pass filters.

## Transmitter details

The transmitter module includes a phase-splitter, driver, amplifier, selectable band-pass filters and the transmit/receive relay. The RF carrier at twice the transmit output frequency is supplied from the DDS and is divided by two by one half of the 74HC74 chip.

The anti-phase signals are passed to a 74HC540 tri-state driver chip which supplies sufficient current to drive the bases of the BD139 transistors. Keying of the transmitter is accomplished by enabling the output of the 74HC540 driver chip. When the key is 'down', i.e. RF output is required, the driver outputs are enabled and current is supplied to the bases of the amplifier transistors. When the key is 'up' the

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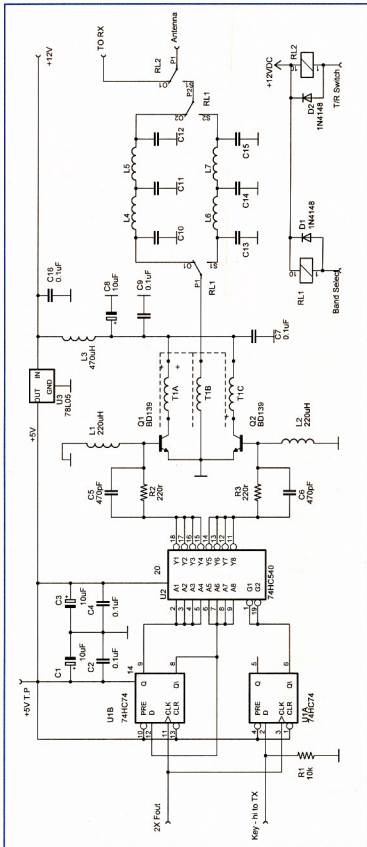


Figure 5: The transmitter module schematic diagram.

driver output is 'tri-stated' (assumes a high impedance state) and no current is fed to the transistors. The transistors are fed in push-pull and their outputs are connected through a broadband coupling transformer which provides a 50 ohm output for the following low-pass filters. The appropriate filter is selected by relays that are switched according to the transmit frequency. In the existing design, filters are provided for the 160 and 80 metre bands; table 1 shows the component values for those bands. If required, other frequencies can be installed as the DDS and transmitter are broadband.

The second half of the 74HC74 divider is used to clock the keying signal so that it is synchronous with the carrier, this reduces switching transients and out of band emissions.

The transmitter module schematic is shown in Fig 5. Output coupling transformer T1 is wound on three Amidon T50-43 ferrite cores stacked together, the primary (T1A & T1C) has five bifilar turns and the secondary (T1B) is seven turns wound adjacent to the primary. Wire size is 0.5 mm in both cases. The component values for

the output low-pass filters are given in table 1.

Component L4 & L5	160 m Band	80 m Band
		2.15 $\mu$ H, 23 turns T37-2 core, 0.5 mm wire
C10 & C12 C11		860 pF 1.8 nF
L6 & L7	3.98 $\mu$ H, 31 turns T37-2 core, 0.4 mm wire	
C13 & C15 C14	1.5 nF 3.3 nF	

Table 1: Low pass filter component values for the 160 and 80 m bands. The filter impedance is 50 ohms and other frequencies can be substituted if required. The ARRL handbook gives tabulated values for a wide range of cut-off frequencies. Capacitors should be good quality polystyrene or silver-mica types.

The remaining sections of the transceiver (receiver and audio modules) along with alignment details, references and component supplier information is contained in the next section of this article.

**To be continued in the September issue of Amateur Radio.**

## Remembrance Day operation from Mallala War Grave Cemetery

Elizabeth ARC hope to operate in this year's RD Contest from this War Cemetery. The World War II RAAF station is now a motor racing circuit but was a RAAF training base in WWII. Accidents in training killed a number of air crew who are buried in the cemetery. They were aged between 18 and 29 years. The Office of Australian War Graves gave permission to operate beside but not inside the cemetery.

Least We Forget.



Steve Mahony VK5AIM, EARC

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# Using "low cost" parts in critical applications – is it worth it?

Felix Scerri VK4FUQ

I decided to write this article after I recently discovered a fault here in the shack that could have had very serious consequences. The cause? Well, I'm not really sure how to describe it, except to say that the use of a less than "prime spec" component in a critical application was more or less responsible.

Please allow me to elaborate. I like to do a fair bit of electronics "home brewing", nothing too complex, things like audio preamps, sundry bits of electronics, antennas of different types, simple receivers and transmitters of varying complexity and dc power wiring. By this, I mean the wiring up of the various components in a typical 12 volt system for use in the shack. Although I have commercial 240 volt power available in the shack, some years ago, I opted to go "battery", of the large "deep cycle" lead acid variety, backed up and kept charged by a single 50 watt solar panel. Over the years, the system has been expanded to include a second solar panel, and here in the shack, more complex power wiring, including regulators and switching.

I've always attempted to install and maintain all power wiring to the highest possible standards, with safety and efficiency being the two things of paramount importance. Everything has worked pretty well with minimal maintenance, and exactly as designed, until recently, when I had noticed my main batteries seemed to be more discharged than usual, despite regular charging through the solar panels. I had attributed this to recent grey skies and reduced solar panel output, as all meters and other indicators here in the shack seemed to indicate all power system components OK.

However, one morning I became suspicious when the charging rate appeared low despite good sunlight. Initially, I suspected a faulty battery, but this proved not to be the case when checked.

Sensing something not right, I connected my solar panels direct in to this battery using a direct bypass switch that I had installed early in the power wiring's initial installation.

I immediately noted a large increase in output from the solar panels. This indicated something amiss with either the solar regulator and/or the power switching.

The original solar regulator had been replaced recently after around twelve years of faultless service, and I knew all wiring and connectors to be in good condition. I "accidentally" found the true fault when I brushed my hand against the double pole toggle changeover switch that switches the output from the regulator to either of two batteries. The switch was hot. That wasn't a good sign!

I quickly removed the switch from service after isolating all power, and replaced the switch with a high quality unit purchased from a local auto electrician. After replacing the faulty switch and monitoring things for a few days, it became obvious that the solar charging system was working better than ever in recent times, and it was apparent that the faulty switch had been failing slowly for an extended period of time, without being noticed.

I had initially thrown the faulty switch away in disgust, early in the exercise, but after it had been replaced, I decided to fish it out of the bin and do some measurements. The

results were most interesting. One "pole" of the toggle switch was faultless, with near zero resistance measured between contacts when switched, however the other "pole" was an entirely different story! The contact resistance, measured from the common terminal to each side of the switch, varied from zero to about 500 ohms in a highly intermittent and erratic manner.

Clearly, here was the reason for the general power loss and a "hot" switch. Apart from being an interesting fault, this experience raises several

questions, some of which are potentially very serious indeed. I guess the main question involves "quality" and "cost". I had purchased the switch from one of the well known electronics parts suppliers who have an excellent general reputation for parts quality. The switch itself was quite inexpensive, but was adequately rated for both voltage and current, and indeed for a month or so, it was fine. That faulty switch had actually been a replacement for an earlier switch that was itself replaced on suspicion of being faulty, having a loose "actuator", but was operationally ok.

I guess the thing that's really bugging me is whether it is prudent to use anything but the very best in a critical application such as power wiring and switching, where the result of failure can be catastrophic. The feeling of a "hot" switch is something not easily forgotten! The fact that the switch was fully acceptable and workable for a period of time, adds an element of vagueness and uncertainty to the general equation. I have since pulled apart the faulty switch for examination and found a pretty basic but workable switch, although it bears all the signs of being a less than "prime spec" design. Then again, the switch was inexpensive when it was purchased. Was it built to a price and an appropriate level of quality? Was it designed for long term reliability and longevity? The switch I have since installed as a replacement is much more expensive and appears to be of excellent quality.

Will it last and be reliable in the long term? I guess time will tell. I hope that it will, as the "bypass" switch I mentioned earlier, is of the same design and was purchased from the same auto electrician, and its operation has been faultless and quite impeccable over quite a few years. In the end, perhaps it's a case of "caveat emptor".

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## A backpacker's delight – the folding J-pole

In QST for March 2005, Michael Heiler, KA0ZLG describes a foldable copper J-Pole antenna for 144MHz.

The antenna is constructed from a 10 foot length of 1/2 inch copper tubing plus a selection of suitable fittings. The final assembly and how it goes together is shown in Figure 1. You will first need to cut five 19 1/4 inch sections and one 2 3/4 inch section from the 10 foot length of 1/2 inch tube

Soldering the pipe joints is the next step. When soldering copper pipe, you will need to clean the area to be soldered. Sanding or even use of a scouring pad will do the job. Solder paste/flux should be applied to the joint ends to ensure a good joint. Solder a straight coupling to one end of two of the long pipe sections

Next, attach two brass nuts to each of the eyebolts and tighten them against each other. Place the eyebolt assemblies inside two of the copper end caps and solder them in place using a propane torch. Fill the end caps with solder to cover the brass nuts. Make sure you use brass nuts as they solder better than steel.

When this is done, lay out all the pieces as per Figure 1 as if they were

joined. This helps avoid mistakes when assembling it all. Make sure the two sections already soldered have the fittings facing down so it doesn't fill with rainwater. Next solder one long section to one end of the T coupling and one to one side of the right angle coupling. On the other side of the right angle, solder the 2 3/4 inch section. The other end of the 2 3/4 inch section is soldered to the T part of the T coupling. Figures 1, 2 and 3 show how things go together.

Now all the pieces are assembled, you need to tie a large enough knot in one end of the bungee cord so it won't pull through an eyebolt. Run the bungee cord through the top eyebolt, through the other pieces of copper pipe and out the support section as per Figure 1. With all sections fitted tightly and the top cap fitted on, pull the bungee cord tight. Then run it through the other eyebolt at the lower end, tie a knot in it, stuff it back into the pipe and place the cap on the pipe. Do not solder the caps onto the pipes, only push them on.

For the feedpoint support, use a piece of plexiglass, cut to 2 3/4 inches square. Drill a 1/2 inch hole in the centre and mount the SO-239 (or other type) connector as per Figure 2. Add the

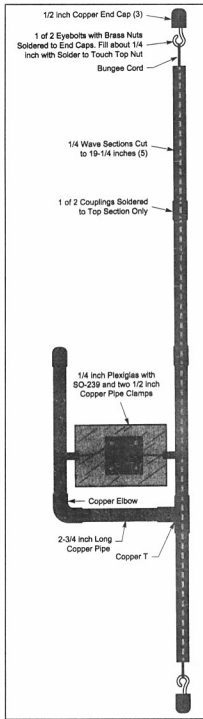


Figure 1. The assembly drawing for the VHF/UHF folding J-pole antenna

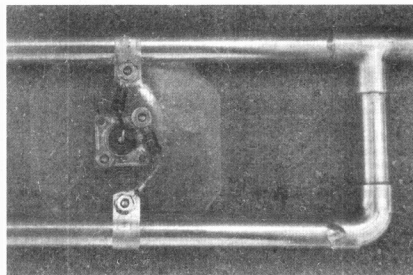


Figure 2. The antenna feed point assembly



copper pipe (saddle) clamps to either side of the plexiglass by bending them around the pipes and bolt them on. Make sure all surfaces are sanded clean. Use two short lengths of stranded wire with terminals soldered onto each end to join the connector to the pipes as per Figure 2.

Once the antenna is assembled it needs to be tuned for minimum VSWR. Start with both pipe clamps about 3 inches up from the bottom of the radiator and matching stub and work down from there. You will need to tighten the clamps reasonably well so you get a reliable RF analyzer reading when testing. The VSWR was 1:1 at 146.6MHz on the unit described. Note that the SO-239 (or similar) connector is not waterproof so some provision must be made to waterproof it.

When the antenna is mounted in a typical operating position, recheck the VSWR to see if it has changed. If it has, you will have to adjust it again as surrounding objects can affect it.

The complete antenna as packed for carriage is shown in Figure 4. Note that the two hose clamps are used to hold everything together in the carry bag, but could be used for mounting as well.

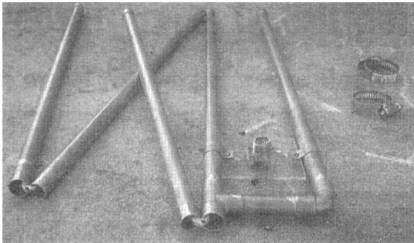


Figure 3. The J-pole in the process of being 'folded'

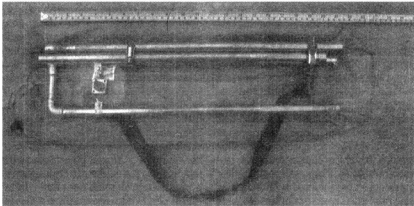


Figure 4. The completed folding J-pole, ready for packing

# Nylon washers as VHF toroids

In the Technical Topics section of RadCom for April 2005, Gary Aylward, G0XAN has found a technique for winding low inductance toroids on Nylon washers in an issue of Electronic Design from 2001.

When inductance values are smaller than 1µH, air cores with unity relative permeability can be used instead of powdered-iron or ferrite cores. For wire size thinner than 20AWG, a coil former is often needed for mechanical support. Nylon 6/6 standard flat washers are usable as low cost coil forms. The nominal electrical parameters are a dielectric constant of 3.6, a dissipation factor of 0.04 and a dielectric strength of 385V/mil.

Winding data based on two standard

(American) sizes of nylon washers are given in Table 1. Some typical toroidal inductors were wound and tested and the results are shown in Table 2. The maximum inductances were obtained with the windings squeezed and minimum with the windings spread. Inductance values were calculated from measured resonant frequencies using a known capacitor. As the winding area is filled, the adjustability of the inductors decreases and there are limitations on the number of turns that can be applied as a single layer winding. It is claimed that, despite its dielectric constant and dissipation factor, the quality of nylon toroidal inductors is quite good with typical unloaded Qs in the range of 75 to 125, more than adequate for most low-

pass and high-pass filters in the range of 30 to 100MHz. They provide small size efficiency and some adjustability. With a 0.250in diameter washer, maximum turns (22AWG) are six and for 0.375in, 15. With 26AWG, maximum turns are 15 and 30 for the same diameters.

Table 1: Nylon Washer Dimensions

Screw clearance	Outer Diameter (in)	Inner Diameter (in)	Thickness (in)
Number 4	0.250in	0.115in	0.125in
Number 10	0.375in	0.194in	0.125in

Table 2: Inductance windings and measured values

Toroid Dia (in)	Inductor winding	Max L (nH)	Min L (nH)
0.250in	7T/26AWG	116	86
0.375in	7T/22AWG	113	86

# A century for a gentleman radio amateur

Jim Linton VK3PC

Friends and admirers gathered to pay tribute to a remarkable individual, Alf Chandler VK3LC, on the occasion of his 100th birthday.

The party was held a day prior to his actual birthday of 1 June, in the Moorabbin and District Radio Club rooms. Distinguished guests were the Mayor of Kingston, Cr Topsy Petchey, WIA President Michael Owen and Amateur Radio Victoria President Jim Linton. Also present were local members of the Victorian and Federal parliaments.

The local newspaper and Channel 9 interviewed Alf at the club's station. He chatted on air and also pounded brass to tap out the words 'happy birthday'. The television news item was seen throughout Victoria and interstate.

To begin the formalities, Moorabbin Club President Ken Morgan VK3CEK read numerous congratulatory messages. The Old Old Timers Club of New York provided a special 80-year membership certificate. The Radio Old Timers Club of Australia, of which Alf is a Life member, warmly acknowledged his loyal involvement.

In recognition of his contributions to amateur radio and the Wireless Institute of Australia, Alf was presented with Honorary Life Membership Certificates from the WIA and Amateur Radio Victoria.

His contributions to the WIA included (1963-1970) membership of the WIA Publications Committee, (from 1967) WIA Intruder Watch Coordinator, first for WIA Victoria, then WIA Federal, and (1975-1982) as Coordinator for the International Amateur Radio Union Region 3.

In 1978 Alf received the WIA Ron Wilkinson Achievement Award in recognition of outstanding achievement "In the field of intruder watch activities", was presented a Silver Medallion for Meritorious Service to WIA Victoria in 1983. In 1984, WIA Federal gave Alf a silver plaque for contribution to the IARU Region 3.



Kingston Mayor Cr Topsy Petchey joins Alf Chandler VK3LC on air.

In a speech about the occasion of reaching 100 years, WIA President Michael VK3KI talked of relativity between Alf's life and the history of radio.

"We honour a friend whose life-long interest has been in radio. Today when radio is so taken for granted it's extraordinary to remember how short is the history of radio," he said.

"It was less than four years before Alf was born that on December 12, 1901, Marconi made the first trans-Atlantic communication without wires."

In 1920 as a 15 year old school student Alf built a crystal set to receive wireless signals from ships, and later the first broadcasting stations in Melbourne.

Picking up on that topic, Amateur Radio Victoria President, Jim VK3PC detailed Alf Chandler's 81-years in radio. These included graduating from the Marconi School in Queen Street Melbourne in 1925 and then being employed at 'Crystal Clear Radio' as a wireless set maintenance employee and salesman.

In 1926 Alf took out an amateur licence A3WH later OA3WH and set up a station at his then home in Beaumaris in Melbourne's south.

At that time there were two amateur wireless groups in Victoria, New South Wales and Queensland. Alf became the Communication Manager for the Victoria Radio Transmitter League. He helped resolve the differences between the Wireless Institute in Victoria and the League, and the latter was absorbed into the Institute.

His Marconi training stood him in good stead when he enlisted in 1940 in the Royal Australian Airforce in the mustering of wireless operators to be posted to many parts of Australia. In 1942 he lost his Beaumaris home after it was engulfed by a scrub fire.

After the war he resumed his amateur radio interest under the callsign VK3LC joining the Moorabbin and District Radio Club in 1959, being its Secretary (1960-63 and 1984-88) and elevated to Life Member in 1992.

His highlights of being a radio amateur

include the Las Balsas Raft Expedition that was adrift for 185 days from Guayaquil, Ecuador, South America to Australia. (Details of the then proposed trip were reported in *Amateur Radio* magazine, January 1971).

Amateur radio was an essential part in the success of the expedition maintaining communications, even when authorities denied the possibility of it reaching Australia. Alf VK3LC was one of a number, including members of the Summerland Amateur Radio Club, who maintained contact.

On Wednesday, 21 November 1973, the 12 crew of the expedition landed at Ballina, northern New South Wales, and Alf traveled to meet them.

The Summerland ARC struck the La Balsa Award in 1985 and launched it in *Amateur Radio* magazine in November of that year. It marked the occasion of Alf's 100th birthday by issuing him an honorary La Balsa Award.

Another element of particular note in Alf's amateur radio career was his consistent on air contact with King

Hussein of Jordan whose call sign was JY1. The two struck up a particularly strong friendship.

During an official visit to Australia in October 1976, King Hussein took time out to catch-up with his radio amateur friend at his home. The King enjoyed the hospitality so much he invited Alf to accompany him to the Royal palace, which he did.

Listening intently as the details of Alf's 81-years in radio were given was Kingston Mayor, Cr Topsy Petchy, who had the role of initiating a toast to Alf.

"Many people do not realise that amateur radio is far more than a hobby", she said. "Flood, earthquake, fire and even in the remote possible of terrorist attack, radio operators become indispensable front line personnel."

Cr Petchy said, "So when we raise our glasses here today to salute Alf and his wife Elyse, it should be noted that today you are also saluting yourselves for the work that you do so well over the course of every single year."

She presented Alf with a certificate of congratulations from the City of Kingston on the occasion of 100th birthday. "This certificate comes on behalf of the council and a very grateful community of Kingston."

Taking all of this in his stride, Alf surprised saying it was all quite a surprise to find so many of his old friends attending for the occasion.

This gentleman of amateur radio thanked all who attended and sent good wishes, and then cut a 100th birthday cake, posing for photographs taken as a record of the occasion by many who admire and are inspired by him.

**Note from the author.** *This article corrects some historical references previously reported in Amateur Radio magazine and elsewhere about the life of Alf Chandler VK3LC.*

**Editors note:** *It was the "Las Balsas Raft Expedition" while the award is singular "La Balsa Award".*

Shepparton & District Amateur Radio Club Inc.



## Radio Club Annual Hamfest

Sunday 11<sup>th</sup> September 2005  
St Augustine's Hall  
Orr Street, Shepparton  
GPS Co-ord 36° 22' 34.0"S 145° 24' 11.5"E

The Shepparton & District Amateur Radio Club has much pleasure in inviting you to participate in our Annual Hamfest to be held between 10am and 2pm, Sunday the 11<sup>th</sup> September. Talk in on VK3RGV 2M repeater on 146.650 MHz.

Entry Only \$5, Door prizes.

### SALES - NEW

Commercial Importers and Suppliers of amateur equipment and accessories

### SALES - SECONDHAND

Pre-loved ham gear and accessories, ex-military equipment, RF test equipment, antennas, etc., etc.,...

Tables available at \$15 each, ( 1.8m long).  
Doors open to sellers at 7am - buyers from 10am.

Bookings accompanied by payments would be appreciated early.

Tables not occupied by 9am or not paid in advance may be reallocated.

For further information or table bookings contact:

The Secretary,  
SADARC Inc.,  
PO Box 692,  
Shepparton 3633

## Silent key

Geoff VK5TY

(written for the ALARA newsletter by  
Marilyn VK3DMS)

We were all saddened to hear of the passing of Geoff Taylor VK5TY, OM of our much loved member Christine VK5CTY.

Geoff has always been a staunch supporter of ALARA, and a wonderful ambassador for amateur radio over a great many years.

He was a great personal friend who always had a quick quip and a hug, and it was a joy to be with him. My OM Geoff and I spent many happy Easters with Geoff and Christine at their Swan Reach bush shack. There was always some sort of project for the men, while we ladies did our thing, often being rubbished for that by Geoff. The evenings were most often spent playing UNO, and the competition was always fiercely funny.

I am sure that every member of ALARA will join with me to support Christine as she starts a different path in life. ALARA has lost a very good friend.

**Dot VK2DB**  
ALARA Editor



# Directory

## The Amateur Service:

a radio communications service for the purpose of self training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique with a personal aim and without any pecuniary interest. 1.56 ITU Radio Regulations.

*The Wireless Institute of Australia represents the interests of all amateurs throughout Australia.*

**WIA membership fees are:** ★ \$ 75 for full members ( F grade ), ★ \$ 70 for pensioners and students (G and S grade), and \$ 50 for membership without 'Amateur Radio' ( X grade ). *Payment direct to National office.*

National Office	Contact	News Bulletin Schedule
10/229 Balaclava Road, Caulfield North VIC 3161, PO Box 2175 Caulfield Junction Vic 3161 Australia	Phone 03 9528 5962, Fax 03 9523 8191, 10am to 4pm daily, nationaloffice@wia.org.au http://www.wia.org.au	Subject to change see <a href="http://www.wia.org.au">www.wia.org.au</a> follow national news prompts. Contact <a href="mailto:nationalnews@wia.org.au">nationalnews@wia.org.au</a> National VK1WIA news is distributed to all states.

Advisory Committees	Contact	News Bulletin Schedule
<b>VK1 Australian Capital Territory</b> VK1WX Alan Hawes VK1ZPL Phil Longworth VK1ET John Woolner VK1GH Gil Hughes	<a href="mailto:secretary@vk1.wia.ampr.org">secretary@vk1.wia.ampr.org</a>	Sundays at 11.00 am VK1WIA 7.128, 146.950, 438.050 Canberra Region Amateur Radio Club Email newsletter will be sent on request to <a href="mailto:president@vk1.ampr.org">president@vk1.ampr.org</a>
<b>VK2 New South Wales</b> VK2QV Chris Flak VK2XCD Chris Devery VK2BFN Adrian Clout	Phone 02 9689 2417	VK2WI - Sunday 1000 and 1930 hours local. 1.845; 3.595; 7.146; 10.125; 14.170; 28.320, 52.525; 145.600; 147.000; 438.525; 1273.500 megahertz. Plus regional relays. VK1WIA news included in the morning
<b>VK3 Victoria</b> VK3JJB John Brown VK3PC Jim Linton VK3APO Peter Mill	Phone 03 9885 9261 <a href="mailto:advisory@viawic.org.au">advisory@viawic.org.au</a>	VK1WIA Sunday 11.0am via HF and major VHF / UHF rpters
<b>VK4 Queensland</b> VK4ERM Ewan McLeod VK4ZZ Gavin Reibelt	Phone 07 3221 9377 <a href="mailto:ewan.mcleod@bigpond.com">ewan.mcleod@bigpond.com</a>	VK1WIA, Sunday 9.0am via HF and major VHF/UHF rpters
<b>VK5 South Australia and Northern Territory</b> VK5NB Jim McLaughlan VK5APR Peter Reichelt VK5ATQ Trevor Quick	Phone 08 8294 2992 <a href="mailto:jimac@picknowl.com.au">jimac@picknowl.com.au</a> <a href="mailto:peter.reichelt@bigpond.com">peter.reichelt@bigpond.com</a> <a href="mailto:vk5atq@chariot.net.au">vk5atq@chariot.net.au</a>	VK5WI: 1843 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.800 FM Mildura, 146.900 FM South East, 146.925 FM Central North, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 LSB, 7.065 LSB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. The repeat of the broadcast occurs Monday Nights at 1930hrs on 3585kHz and 146.675 MHz FM. The broadcast is available in 'RealAudio' format from the website at <a href="http://www.sent.wia.org.au">www.sent.wia.org.au</a> Broadcast Page area.
<b>VK6 Western Australia</b> VK6NE Neil Penfold VK6XV Roy Watkins VK6OO Bruce Hedland-Thomas	Phone 08 9351 8873 <a href="http://www.vk6.net/">http://www.vk6.net/</a> <a href="mailto:advisory@vk6.net">advisory@vk6.net</a> <a href="mailto:vk6ne@upnaway.com">vk6ne@upnaway.com</a> <a href="mailto:vk6xv@bigpond.net.au">vk6xv@bigpond.net.au</a>	VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz. Country relays 3.582, 147.200 (R) Catby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury), 147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900, 147.000, 147.200, 147.250 and 147.350 MHz. Also in "Real Audio" format from the VK6 WIA website
<b>VK7 Tasmania</b> VK7ZAX Phil Corby VK7DG Dale Barnes VK7KK Reg Emmett	Phone 03 6234 3553 <a href="mailto:phil.corby@tassie.net.au">phil.corby@tassie.net.au</a> <a href="mailto:vk7dg@wia.org.au">vk7dg@wia.org.au</a> <a href="mailto:regemmm@ozemail.com.au">regemmm@ozemail.com.au</a>	VK1WIA Sunday 9am on VK7WI network: 3.570MHz LSB, 146.700 MHz FM (VK7RHT South), 53.825MHz FM (VK7RAD South), 147.000MHz FM (VK7RAA North), 146.750 FM & 53.825MHz (VK7RWN North West), 146.625 MHz FM (VK7RMD North West), UHF CB Channel 15 (Hobart) and 27MHz CB - 27.225MHz LSB (Hobart). Followed at 9:30am with VK7 Regional News Broadcast also on 7.090MHz LSB & 14.130MHz USB

### Notes

1. Only three members of the state advisory committees are listed.
2. All listings are preliminary. They will be updated each month as required.
3. Membership application forms are available from the WIA web site [www.wia.org.au](http://www.wia.org.au) or the national office address above.

# Home brew – the satisfaction of “rolling your own”

David A Pilley VK2AYD  
davpil@midcoast.com.au

Today so many radio amateurs are what is colloquially known at “appliance operators”. Nothing wrong in this; they are the backbone of today’s amateur radio hobby. There are those that just like operating and those that like “rolling their own”!

At the ORARC Field Day held at Port Macquarie this year, there was an excellent display of “Home brew” exhibits and to me personally, one of the finest I’ve seen. Much of the kudos must go to John Marriott, VK2CIF and Mark Swannack, VK2HMF. Their presentation of handiwork ranged from an exotic Crystal Set to multi-band HF receivers. Both John and Mark said they were inspired by much of the well known designs created by Drew Diamond VK3XU whose designs have appeared in “Amateur Radio” over the years. Not only was the equipment excellent, but each was complete with a handbook of the construction used. I asked John about circuit boards and when he explained the simple way he made his own, I decided to try my own hand and this will be the subject of another article.

Everything you see in the photograph was home constructed. That’s Mark on the left and John on the right.

Equipment left to right on the table is:

TCF40 40 metre Transceiver  
CW Stacker/combo  
TCF80 80 metre Transceiver  
TCF 40 40 metre Transceiver  
8 Amp Power Supply  
ATU Transmatch and Twin SWR meter  
40 watt Amplifier  
3 Band Receiver  
Equipment on top:  
Crystal Set  
Frequency Counter  
CW Decoder  
Twin SWR Meter

3 Band Receiver  
Electronic Keyer  
Portable RF Resistance Measuring Set

You may wonder what the item with the big knob is in the right hand corner of the photo. It was quite the talking point. Have you ever had the problem of holding components on a printed circuit board while you soldered them? This unique device is the solution. Simply made with wood and a some ingenuity!

A truly remarkable collection of items that was the outcome of hours of meticulous handiwork. An inspiration to the “do-it-yourself” enthusiasts, and they would be delighted to share their construction knowledge with anyone interested in home brewing. Check the Callbook for their addresses.

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## AGM

After the 2005 ALARA AGM the following YLs are the new Committee.

### Office bearers:

<b>President:</b>	Susan VK7LUV
<b>First Vice-President:</b>	Marilyn VK3DMS
<b>Second Vice-President:</b>	Bev VK6DE
<b>Secretary and Treasurer:</b>	Margaret VK4AOE

<b>Historian and Librarian:</b>	Shirley VK5JSH
<b>Minute Secretary:</b>	Bron VK3DYF
<b>Publicity Officer:</b>	Christine VK5CTY
<b>Sponsorship Secretary:</b>	Maria VK5BMT
<b>Souvenir Custodian:</b>	Margaret VK4AOE
<b>Awards Custodian:</b>	Kathy VK3XBA
<b>Editor:</b>	Dot VK2DB

### State representatives:

<b>VK1/2</b>	Dot VK2DB
<b>VK3</b>	Bron VK3DYF
<b>VK4</b>	Dawn VK4HER
<b>VK5/8</b>	Jean VK5TSX
<b>VK6</b>	Bev VK6DE
<b>VK7</b>	Rosanne VK7NAW

## Silent keys

Two of our ALARA members became Silent Keys earlier this year.

Lorrie VK3AGO had been an ALARA member for 26 years after joining in 1979.

After marrying and moving to Australia from the USA, she gained her radio licence and was able to communicate with her parents by radio.

For 37 years, Lorrie took the world of puppetry to legends of Victorian school

children through the Gardner Puppet Theatre which she established in 1967.

Her last performance was in October last year at her grandson's kindergarten.

Lorrie passed away at Easter.

Margaret ex VK3DML joined ALARA in 1977 and held many positions on ALARA's Committee during the '80s and '90s.

She coordinated the Castlemaine

ALARAMeet in 1993 and took us to places that we wouldn't have known about had we been just travelling through.

Margaret was interviewed for newspaper items and, in 1985 for an article in New Idea. Her words interested a lot of ladies who had never thought of radio as a hobby for ladies.

Both ladies will be sadly missed by the members of ALARA.

## ALARAMeet

Many of ALARA's sponsored YLs come to ALARAMeet. We always have a group of YLs and OMs from New Zealand to our ALARAMeets and we do enjoy their company. Ngaire ZL2UJT is coming over to her first Alarammeet arriving in Melbourne and travelling over slowly to Mildura, stopping at some of the great spots on the way. She is hoping to do some sight seeing in Melbourne, going for a ride in a train etc (I love trains).

She has just recently returned from a couple of days on Mana Island which is an island off the coast from Wellington. She went over there with the Conservation Department people to release a colony of her captive bred Lizards. It's been a dream of hers for many years to be able to release her Geckos in the wild to preserve the species. Mana Island is a predator free island and hopefully as Ngaire's females were pregnant, they will help expand the small colony already there.

If there is anyone who is planning to attend ALARAMeet and hasn't booked in yet, you are leaving it very late but



Ngaire ZL2UJT with some loved friends

I'm sure there will still be room for you. Contact Marilyn VK3DMS QTHR the callbook or at vk3dms@wia.org.au

## The Contest

### 25th ALARA CONTEST

**Celebrating 30 years since the founding of ALARA with special points for contacts with original ALARA members**

**STARTS:** Saturday 27th August 2005 at 0600 hours UTC

**ENDS:** Sunday 28th August 2005 at 1159 hours UTC

A special for this year only:

**CONTACTS WITH ALARA MEMBERS WHO JOINED PRIOR TO 1980 - Multiply your points by 3.**

After you have taken part in the ALARA Contest, send your log to the Contest Manager, Marilyn VK3DMS by mail QTHR or email alaracontest@wia.org.au

It must reach her by 31st October 2005.

ar

## VK2

### The Blue Mountains Radio Club Winterfest

The Blue Mountains Amateur Radio Club will be holding WINTERFEST on Saturday August 27 2005 at the 1st Blaxland Scout Hall, Reading Street, Glenbrook NSW.

Last year was a very successful event with over 100 attendees, including sellers. This year there will be an even larger number of sellers attending, including VK Cables, Action Communications (an authorised Benelec Dealer) and the Amateur Radio NSW Bookshop. Nepean Amateur Radio Group and Chifley Amateur Radio Club will also be attending. There will be a large number of private sellers participating in the car

boot sale, which proved very popular last year.

Gates open to buyers at 12:00 noon. Sellers should arrive at 11:00 am to setup. There will be a \$5.00 charge for sellers. Entry for buyers/visitors is by gold coin donation at the gate. Free tea and coffee will be available to all attendees.

So come along and join in all the fun and bargains on offer, and all

the fresh mountain air, at this year's WINTERFEST.

John Watt VK2QN  
Publicity Officer

on behalf of the Blue Mountains Amateur  
Radio Club Inc

### Silent Key

David Moss VK2UDM of  
Blaxland. Passed away 11/7/05  
Notified by Dave Horsfall VK2KFU  
(WICEN)

## VK Books

Long time author and ham radio operator VK4KVK released 3 new books @Barcfest in May.

*The VK Antenna Handbook for Restricted Spaces*

*The NuBeam Antenna*

*The TLV Antenna*

all represent a new era for books in VK. The first book, as the title suggests, is written as a reference source for ideas on fitting antennas into small spaces - more a less a problem for all hams. Also available in CD pdf format for quick searches.

Check out his web site

[www.grimshaw.net.au](http://www.grimshaw.net.au)

for direct purchases or visit

KVK Antenna Systems

[www.kvkarntennas.com.au](http://www.kvkarntennas.com.au) for  
credit card purchases

or ph 07-3216 8060 or sales@kvkarntennas.com.au

## VK3

### Geelong Radio and Electronics Society (GRES)

The 3 months from April to June has again provided an interesting syllabus for members. In early April we were visited by members of the Ballarat Amateur Radio Group (BARG). They arrived by bus and we gave them a short history of amateur radio in Geelong. This was followed by supper and a tour of our clubrooms.

There were 4 guest speakers over the 3 month period. Phil Hapgood VK3ATI operates his own business in Geelong. He supplies and installs renewable energy systems. Phil explained to us lesser known facts about solar and wind power. These included correct installation of solar panels, types of batteries etc.

Another interesting talk was given by Bill Husin VK3YHT. His topic was cavity resonators. Bill has been employed installing and maintaining radio communication systems. He not only talked about cavity filters but also described how modern commercial systems are installed. He emphasised that for commercial use, the radio is the least expensive item. The ancillary equipment that must be used for signal isolation etc. is the more expensive items. It brought home the point that,

compared to commercial installations amateur stations are quite simplistic. Two other interesting talks were given to members. These were the latest methods for homebrew printed circuit boards and digital photography.

In addition to the Thursday evening meetings, the clubrooms are open every Wednesday. Over the last 3 months a great deal has been accomplished. Many items such as defunct computers, VCRs etc. have been stripped for useable components and scrap metal. Over 900 kg of scrap metal was sold to metal recyclers. Also our library has been put in order. We have over 3000 books and magazines available for borrowing by members.

The Wednesday meeting is not confined to work on club projects. It also gives members a chance to use the workshop facilities, or to get help with a homebrew project that is not working correctly.

Our committee has drawn up a syllabus for the remaining 6 months of this year. Again the syllabus should not only be entertaining, but also most informative for our members.

Rod Green VK3AYQ

## VK4

From Alistair Elrick VK4MV



### Central Highlands

The Central Highlands Amateur Radio Club Annual General Meeting, happens at Camp Fairbairn, Emerald from 5 pm Friday September 30 until 10 am Sunday October 2nd. Conditions of entry can be requested from Club Secretary Gordon on (07) 4985 4168

### Gold Coast ARS

Jim, Roddie, Bob, John (VK4HFE), and myself went up to Springbrook to try out a few changes to the .950 repeater to try and get to the bottom of the annoying intermittent crackling that has plagued the repeater for some time now. Firstly we put up a temporary 'water pipe' mast and J-pole antenna built by Jim in place of the original repeater's antenna, this was to try and prove if the antenna and/or feedline was causing the crackling. We added a 12 V fan inside the repeater's case, and a small row of 'rope light' to warm up the inside of the case to try and prevent condensation and circulate the air in there a bit. There has in the past been quite a bit of condensation appearing in the casing from time to time. We added some draught excluding tape all around the inside of the case door and blocked off some of the vents in the casing that were allowing water entry under heavy rainfall. That's about it for now until the crackling either returns or stays away and we will then look into the antenna and feedline further. Jim may remember more or want to comment also. Regards, Raff

### Townsville. The TARC

Sunday 10th July, saw the running of the Strand Mini Swim No.2, immediately following QNEWS. WICEN Operators assembled at Picnic Bay Surf Lifesaving Club from 9 am and were in position around the 3.5 km course ready to track swimmers and provide the logistic communications support necessary to make this popular event run smoothly.

There was a good turn-up to the Ladies

Group Coffee-Meet held on the previous Sunday, a bit of catching up was done and the excursion to the Heritage Tea Rooms at Herveys Range also discussed. That will occur on the 7th of August.

Look out for the Monday Nights that are for the Ann Renton Memorial Ladies Net on the Townsville VHF Repeater. The Net starts at 7 pm and all YLs, XYLs, OM's and XOM's, either licensed or acting as a second operator, are welcome to participate!

Then there are the Tuesday Night TARC Project Nights, happening from 7.30 pm at the Club Rooms, SES HQ, Green Street West End. Bring that pesky problem along, or just come along to give some help, or just come along to watch and learn!

### VK4 Area Radio Scouting

<http://www.scouts.com.au/international/jotafront.html>

VK4 Enquires to:- Dr Paul Rollason, International Commissioner, QLD [bc.international@qldhq.scouts.com.au](mailto:bc.international@qldhq.scouts.com.au)

Jim Wagner [finnwags@bigpond.com.au](mailto:finnwags@bigpond.com.au) from GLASSHOUSE MOUNTAINS CUB PACK is hoping for a club or operators in his area so as he can go JOTA-ing this year. PLEASE contact via the email address.

### VK4 Contesters

Please note this new correct email address for VK4AJS Jack Files Contest Manager:- [vk4ajs67@optusnet.com.au](mailto:vk4ajs67@optusnet.com.au) And new postal address -26 Kerr Street North Rockhampton 4701 Cheers John VK4AJS.

### The QNews Work Bench - the nuts and volts report -

(Measure twice - Cut once!)

### Micro Size Repeater Controller From NHRC

Repeater operators. This one is for you. Look for a new and tiny sized repeater controller coming soon from NHRC Repeater Controllers, LLC. This controller is described as revolutionary

in that three units reportedly fit on approximately the surface area of a business card. Tiny yes, but powerful. According to Kevin Custer, W3KKC, writing on Repeater - Builder Dot Com, this controller, when officially released, will be capable of at least 3 modes of operation. Those being a complete Repeater Controller, an I'Der and a Beacon Controller. All user settings will be programmable either over the air" or via the on board serial port and Windows compatible software. Kevin says he has also heard that NHRC is considering building an adaptor board to allow the unit to be mounted into the GE MASTR-II radio set. He adds to keep an eye on [www.nhrc.net](http://www.nhrc.net) for more information in the very near future.

## VK5

### News from the Valley

The Barossa Amateur Radio Club held its AGM on Wednesday July 6th, which was well attended. The outgoing committee were thanked for their efforts and fresh elections held, with outcome being,

President: Ian VK5AIC,  
Vice President: John VK5PO,  
Secretary: Brian VK5UBC,  
Treasurer: Norm VK5ZAH,  
Publicity Officer: Richard VK5USB,  
Committee: Bronte VK5AY, Steve VK5ST, Peter VK5AWP, and Peter VK5ZLX.

Congratulations all. The next major event for the club will be the activation of the Corny Point Lighthouse as VI5CP on the weekend of 20th and 21st of August. Special QSL cards are being printed and they would like to make as many contacts as possible.

The club will be once again be assisting WICEN with TOYOTA Rally of SA, and the August 3rd general meeting will be held at Brian VK5UBC's QTH with the main activity being preparation and final planning for the lighthouse trip.

73s, Richard VK5USB  
Publicity Officer BARC.



## VK7

Justin Giles-Clark, VK7TW

Email: vk7tw@via.org.au, Regional Web Site: reast.asn.au

### BPL in VK7 – Aurora Energy's 2nd Trial

The start of the trial is a moving feast however, the latest is a start this month and what appears to be the infrastructure for BPL is appearing on power poles around Hobart. The mobile field strength team has been taking background readings and is ready for the start of the trial. A VK7 BPL Watch web page has been established on the Regional website and is regularly updated as information comes to hand.

### Congratulations

Congratulations to Vince Henderson, VK7VH and Dave O'Brien, VK7KDO in the recent Trans-Tasman 80m contest. Vince came 3rd in the phone section and Dave came second in the QRP Phone section. Other notable VK7 entries were from NTARC, VK7TAZ, Hayden, VK7HAY, and Roger, VK7XRN.

### VK7WI Callback Statistics

The VK7WI callback stats for the first half of 2005 have been published on the regional website and it's great to see an overall increase in the numbers

of listeners from an average callback number of 70.7 in 2004 to 81.3 in the first half of 2005. The increases can be attributed to VK7RHT, VK7RNW 6 metre, VK7RMD and UHF CB, well done to all those who contributed to this increase. We also set a record in this period with a peak of 100 callins across VK7 on 10 April 2005. That's just over 20% of the total of almost 500 licensed amateurs in VK7. Keep up the great work!

### GippsTech and VK7 Sessions!

The weekend of the 9 & 10 July was GippsTech 2005 and it was great to see two VK7 amateurs providing three sessions during the proceedings. Rex, VK7MO gave two sessions on Calculating Troposcatter Losses and High Stability Crystal Ovens and Joe, VK7JG gave a talk on the modification of the FT847 to eliminate frequency drift.

### Winston Churchill Fellowship awarded to VK7 amateur

A Churchill fellowship has been awarded to Mike Harris (VK7ACQ, G0HOC, KB2SED) for a study of complimentary

use of HF and Internet technologies in the US and UK. The main objective of Mike's study will be to produce an educative report providing broad evidence, experiences and information on these activities. Its aim will be to convey a range of activities in which amateurs can be involved particularly those that help serve and support wider communities. Congrats Mike.

### Central Highlands Amateur Radio Club of Tasmania

A quick reminder to put the Wadda Cup contest in your diary – 24th September 2005. See last month's AR mag for details.

### North West Tasmania Amateur Radio Interest Group

NWTARIG congratulates Matthew Ralston and Keith Winkler for success at recent Novice examinations and Vernon French for achieving his full call (VK7TVF).

Club Station VK7NW is the originating station for both Spectrum Newscasts on Monday nights and Spectrum Extra on



Skipper Leigh demonstrating the nav panel.



Thursday nights. If you or your Club/Organization have material you would like aired via Spectrum, then please contact us by email to [spectrum@spamex.com](mailto:spectrum@spamex.com).

## Northern Tasmanian Amateur Radio Club

A correction, the meeting referred to last month was the May 11 NTARC meeting not June 8! On June 8, Norm, VK7AC discussed his exploits on towers. Norm demonstrated several commercial connectors and cables and his video of the views of Sydney from atop the Channel 10 tower left most attendees suffering vertigo!

## Radio and Electronics Association of Southern Tasmania Inc.

Over the weekend of 8-10 July a WICEN team of 32 operated to provide the communication infrastructure for the VK7 leg of the Subaru Safari. The team included 12 licensed amateurs plus 2 licensed juniors, 2 more juniors studying and other operators with marine, commercial or emergency services experience and 2 XYL's. WICEN also provided IT support for the Rally HQ in Geeveston.

Wednesday afternoons at the Domain clubrooms have seen about 10-20 regular attendees between 12:00 and 16:00 and

activities include an active repeater group, trading, some WICEN radio re-programming, projects, homebrewing and even rag chewing and SSTV from the club station.

On 6 July REAST members and friends were treated to a tour of the Police Vessel Van Diemen. Our host was Skipper Leigh Stanley. This is a very impressive 23m vessel with full facilities for their crew of 5. A full range of communications modes is available including - Satphone, VMS, CDMA, VHF, VHF Marine, Fax, Email and internet. The Van Diemen will feature this month on the ABC in a series called Real Life Rescue. Many thanks to Leigh for showing us around.

## VK4

### Far North Queensland Horse Endurance Ride - Herberton

Radio Amateurs once again provided radio coverage for the above event from 21 - 25 June 2005, as they have done for the last few years.

The event covers about 80 km per day, two 40 km sections, and requires about three checkpoints during each section to ensure both horse and rider are on the correct track. These ensure they are fit and well, as well as giving the participants an indication of their speed.

Amateurs assisting were Dennis VK4DJI, Stan VK4MFA, John VK4JON and Mike VK4MIK.

Communications were via 2 m FM, both simplex and duplex (VK4RTA),

plus UHF CB which allows the base operator to direct aid to riders. There is a first aid person, as well as a vet and farrier at base during the ride.

The base antenna was a 5/8 whip with radials on sectionalised aluminium poles which are about 10 metres in height. Due to the hilly terrain, the use of 2 m and knife edge diffraction allows signals to propagate out of valleys, etc.

Once again the "Radio Men" received much praise for being a cheerful face, having a joke, giving water and just being there. As the ride progressed the appreciation increased due to the tiredness factor of horse and rider.

The days began before 5 am and concluded with a briefing on the next

day's route and allocation of checkpoints about 4-5 pm.

Visitors to us were Dave VK4KIX and Bill VK4WL. Local hams also made contact over the period with Gary VK4ABW from Townsville, who made contact via VK4RTA - over 200 km!

Also, a long wire was trialled for our forthcoming event at Cooktown for the International Lighthouse Weekend, where we will be using the callsign V14GHL. A couple of contacts into Japan were made with JN1VXT portable 6 and JA3KW portable 6 with our signal report of 5-9.

The "Radio Men" once again thoroughly enjoyed themselves whilst providing a public service.

Mike VK4MIK

### WANTED- OLD HI-FI

We buy old stereo equipment 1950 - 1980 working or not! Turntables, speakers & amplifiers by QUAD LEAK RADFORD TANNOY KEF LUXMAN ORTOFON LINN NAIM THORENS SPENDOR & more.

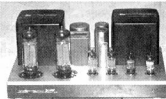
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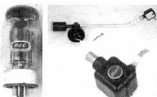
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2A3 KT66 KT88 EL34 300B  
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...WE PAY \$20-\$100 EACH

# VHF/UHF - an expanding world

David Smith VK3HZ - vk3hz@wia.org.au  
Leigh Rainbird VK2KRR - vk2krr@wia.org.au

## Weak signal

David Smith - VK3HZ

Not a great deal to report this month on the propagation side of things. However, even in winter, it is worth keeping an eye on the weather chart for the presence of a high-pressure cell in the right location. On the evening of 29 June, conditions picked up between Melbourne and Mt Gambier, with the VK5RSE 23 cm beacon reaching S9 in Melbourne. The weather chart for the time is shown below.

Of note is the presence of an intense high-pressure cell in a position where the isobars form a line of constant pressure between Melbourne and Mt Gambier. When you have this sort of alignment, it is definitely worth having a listen to the beacons as, more often than not, you will find tropo enhancement in the area. I scan the weather chart each night on the evening news, looking for such areas.

Doug VK3UM reports that, following his GipsTech presentation, he has released version 5.0 of his EMRCalc program. Several refinements have been added including ACMA Compliance Level 2 indication, E and H Plane requirement calculations, FCC levels in line with their current requirements

as well as CEU (Council of European Union. ICNRP recommendations). On screen help/definitions have been extended. It may be downloaded from [www.qsl.net/vk3bez/VK3BEZ.htm](http://www.qsl.net/vk3bez/VK3BEZ.htm)

GipsTech 2005 was another great success with nearly 100 amateurs and their partners attending. There was a full program of talks covering many areas of weak signal, EME, digital, microwave and even optical communications. During the coffee breaks, attendees had the opportunity to purchase specialty bits and pieces from several stalls, or browse the many technical displays. The lunches and evening dinners provided the opportunity to catch up with many of the like-minded enthusiasts in attendance. Thanks go to Peter VK3KAI and his cast of thousands who organised the weekend, which ran without a hitch (apart from Peter's car and house keys departing back north with one of the attendees). Also thanks to Alan VK3XPD who donated several prizes raffled off over the weekend. GipsTech 2006 is tentatively planned for 8 & 9 July, so mark that in your diary.

## EME

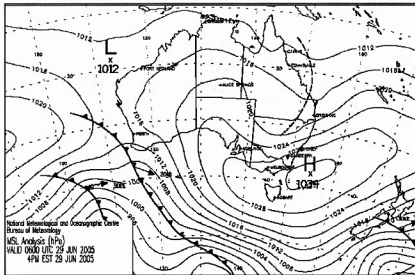
Doug VK3UM reports on his activity during the recent DUBUS EME contest over the weekend of 11-12 June.

"Conditions on 432 were poor to terrible at this location (worst for years). From my Moon rise at 01.20 Z 11 June 05 to about 02.30 Z fairly normal but significant defined (mostly aligned) Faraday. Suspect a disturbance at about 0230, as Libration became significant to extreme all through to my Moon set at 1033 Z. Deep short-term fading was also predominant making copy very difficult. Sun noise measured at 03.15 Z indicated very high activity and from my calculations relate to a SFU of about 140.

On Sunday 12 June 05 at my Moonrise 0140 Z Libration was still significant and again Faraday seemed still very narrow but nearly aligned. Fading was minimal but alignment was such as to make things difficult. I was transmitting and receiving vertical with one exception KORZ. (normally I Tx V and Rx H into NA). Conditions had improved significantly at Moonrise into Eu at about 0830 Z. Libration had disappeared and signals were good. Unfortunately it did not last and from about 10.10 Z polarity again began to swing and Libration and deep short term fading returned with a vengeance. It was extremely hard going. Sun noise measured at 03.30 Z Sunday was back to normal at about a SFU of 80.

Participation was not great from NA but good from Eu. Plenty to keep me very busy though. The "gentlemen" operating times for us all were great for a change!

Here are some observations that may be of interest. Sun Noise on Saturday showed a 2.5 dB advantage in vertical polarization over horizontal as did ground noise in this polarity over what I measure as normal. Sunday's measurements returned normal figures. The apparent very narrow polarization



also provided some interesting and most detrimental effects. When Steve K1FO called me at 0159 Z Sunday I could not believe it was him at first and thought he was a little tardy in rotating the array. Not so, signals were "only" 55n so even the most experienced polarization alignment expert did not have it right. I also spent some time trying to decipher a very weak signal that turned out to be Trevor VK4AFL whose alignment at the time must have been close to a null for me. HB9Q was also "weak" at 55n and was only being received horizontal - were they Tx Linear? There were amongst all these degraded signals some outstanding and totally devoid of fading and Libration (at the time I was listening). These included from memory K5JL, DL9KR, D7APV, F2TU.

It was the hardest weekend I have participated in that I can recall. The Sun activity appeared to screw things up big time and for hours and hours on end. It must have tried everyone's patience to the extreme. It proved however to be most rewarding though, as one

had to pull every trick in the book to decipher the extremely librated signals. I witnessed time and again the skill and patience from our fellow operators. I could not help thinking how much computer power (without any outside assistance) would be required to do what we humans were employing at the time. I felt I was using more ESP than DSP! It also appeared that the effect was not always reciprocal as I spent many Y's trying to decipher who was calling at times. One QSO took over half an hour! It was apparent that the other station was copying fine at the time when I was suffering from severe Libration. After it was all over I listened on 20 metres for a while to "detox" and assure myself what non-librated CW still sounded like! How easy is it there!

The following is an abbreviated list of stations worked:-

11 June 2005 - K5JL, VK4AFL, JA6AHB, KL6M, VE6TA, K0RZ, N9AB, OZ6OL, SM3BYA, SM3AKW, SP6JLW, SV1BTR, RW3RW, DR3RU,

OZ4MM, HB9Q, DL9KR, OK1CA, DLOGER, F6KHM, G4YTL, G4RGK, DK3WG, J4NNJ

12 June 2005 - K1FO, JA6DZI, JA9BOH, KL7HFQ, DL7APV, SM2ILF, SM4IVE, RW3PX, F2TU, OK2BDQ, DL7UDA, EA3DXU, G3LQR, DJ6MB, I5CTE, S53RM, S53J, G3LTF, S54T, SM5IOT

for a claimed total of 44 stations and 23 multipliers 101200 points. (Total 6.5 hours operating time... all totally random... zilch assistance in any shape or form... a ticket holding member of the elite Dinosaur Club and proud of it!..)"

Despite the poor conditions and the additional handicap of a far southern location, Doug's efforts seem to have paid off. According to the latest 432 and Above EME Newsletter, it looks like Doug has taken out second place in the contest against many much more favourably located stations. Congratulations to Doug.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

## Digital DX Modes

Rex Moncur VK7MO

Joe Taylor, K1JT, has released a "maintenance update of WJST" Version 4.9.8. It is useful in eliminating computer lock-ups with older versions and there are a few other minor bug fixes. Joe is now going back to the drawing board for a major re-write and has been seeking advice from users on their preferences for new features. His intention behind the re-write is to make WSJT independent of the Operating System, which would hopefully allow him to overcome some of the timing issues associated with Windows. This is turn may make it possible to achieve such things as averaging the input to the correlation (or deep search) decoder and make further sensitivity gains. From a VK point of view I have been encouraging Joe to add a more effective

Meteor Zapper for JT65 and to allow longer message strings on FSK so one can send messages to more than two stations at a time, such as would be helpful on DXpeditions.

It is good to see John, VK5PO and Jeff, VK8GF trying out FSK441. John has also worked Wayne, VK4WS. Interest in VK4 is increasing with Phil, VK4CDI and Trevor, VK4AFL also now active.

The ZLs have established weekend activity sessions on 144.230 and have 4 or 5 stations participating each Saturday and Sunday. Bob, ZL3TY, reports that this is already leading to equipment improvements by a number of stations and hopefully it should result in some meteor scatter contacts from VK2 and VK4 to the North Island.

Ron VK6KDD reports that he and Don

VK6HK have been testing with JT6M on 50.230 MHz between Port Hedland and Perth - a distance of approximately 1500 km. Contacts were made quite easily, completing in about 15 minutes. Long bursts and audio were clearly heard with many multiple decodes. Ron described it as an easy contact. Compared with 2 m, the bursts on 6 m are much longer - multiple seconds instead of fractions of a second. This allowed the noise blanker to be used. Ron's next sked on 6 m is with Otto YB0ASG in Jakarta - a distance of 2014 km. Ron managed to work him the Sunday prior on 50.110 in SSB.

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au.

## The magic band - 6 m DX

Brian Cleland VK5UBC

The month of June started with the very disappointing news that the Australian Broadcasting Authority had released a discussion paper which indicated that one of the candidate bands for the introduction of Digital Radio Services

was VHF Band I (45-52 MHz and 56-70 MHz). This would obviously be very detrimental to 6 m operation in the 50-52 MHz area and could mean interference which would make weak signal overseas contacts impossible or even mean the loss

of the first 2 MHz (50-52 MHz) of the 6m band for Australian Amateur operation. The paper sought submissions by the 27th June on the issues raised in the paper and several 6 m operators around the country submitted submissions.

The WIA also produced an excellent submission, which in summary opposed the introduction of DRS in the 45-52 MHz band and sought the allocation of the 50-54 MHz band to the Amateur service on a primary service basis once the existing Channel 0 transmissions are discontinued. The 50-52 MHz portion of the 6 m band is presently secondary service. Check the WIA submission, which is available on the WIA WEB site and let the WIA Directors know how you feel about this important issue.

The month of June produced several winter E's openings. On the 13th June the band opened between Brisbane and far north Queensland. Scott VK4JSR in Brisbane reported working Gary VK4ABW Townsville and Paul VK4APN Cairns.

## 2 m & 70 cm FM DX

Leigh Rainbird - VK2KRR

Only very few openings in VK during June.

Some limited conditions appeared around north Queensland in the morning of the 13/06. Mike VK4MIK at Butchers Creek had good signals in from the Townsville repeater just after 0700. Mike spoke to Felix VK4FUQ from Ingham, with repeater signal up to S7, but slowly dropped out. Mike then had a listen to VK4RTA repeater on the Atherton Tablelands and could hear John VK4FNQ coming in from Charters Towers, Ross VK4AQ at Innisfail and also Dale 4DMC and Russell 4BEG from at Kurramine Beach. Mike had a listen on reverse and was able to copy all these stations also on the direct path.

An interesting report from Damien VK3HGY at Mirboo North in South Gippsland. On the evening of the 29/06 Damien got a taste of some real 2 m DX, working into VK5. Damien was able to make it into the Mt Gambier 146.900 repeater over a distance of 474 km. Welcoming Damien's signal to the repeater were Bill VK5WCC, Colin VK5DK and Michael VK3KVV (Ballarat). Damien reports the signal was up to S4 at times and he is running an Alinco dual-bander and a Diamond X50 vertical. This was Damien's furthest repeater contact to date.

Please remember to send through any 2 & 70 FM DX reports to Leigh VK2KRR at vk2krr@wia.org.au

Then on the 15th June Rob VK1ZQR reported the band open from VK4 to VK7 and all points south of VK1. On the same day Dave, a SWL in Adelaide, reported hearing the Alice Springs VK8RAS/b and Richard VK5USB worked Ray VK4BLK Yepoon. Steve VK3SIX also reported hearing some JA activity on that day.

The main winter openings then occurred on the 19th & 20th June. Brian VK5UBC reported the band opening to northern VK2, VK4 and VK6 on both days with several contacts completed. The opening to VK6 on the 19th was particularly good with both Peter VK6KXW and Steve VK6VZ being worked. Steve is new to 6 m and had good signal running 70 W and using a

5 el yagi. This was his best DX to date, welcome Steve. On these days the band was also open up and down the east coast with ZL contacts being reported from VK2, 3, 4 & 7.

On the 29th June Norm VK3DUT and SWL Dave from Adelaide reported ZL TV and the ZL3SIX/b but no stations heard. To round off the month on the 30th June Wayne VK4WS worked Brian VK5UBC.

The month of August is probably the best time to carry out any antenna work etc in preparation for the coming DX season.

Please remember to send any 6 m information to Brian VK5UBC at bcleland@picknowl.com.au. Thanks to those who are sending me information - I can only report what I know.

## Corrections to article in July *Amateur Radio*, page 20:

### VHF and microwave propagation characteristics of ducts (Part 2)

by Andrew Martin VK3KAQ

1) Figure 9 on page 20 should be:

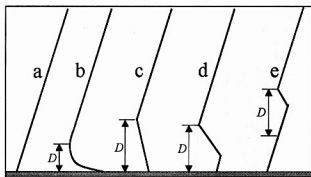


Figure 9. M profiles for various types of ducts. The depth of each D duct is shown for each type of duct. The M profile for a standard atmosphere (a), an evaporative duct has depths of up to 40 m (b), surface ducts have depths up to 300 m (c and d) and elevated ducts have depths up to 300 m at heights between 400 m and 1400 m (e). Elevated ducts also occur above 1400 m but are of limited interest to amateur operators.

The error was made during layout.

2) Correction to equation (3) on page 20. Should read:

$$\lambda_{\max} = 0.6 * A * D * \sqrt{\Delta M} \quad (3)$$

instead of

$$\lambda_{\min} = 0.6 * A * D * \sqrt{\Delta M} \quad (3)$$

We apologise for any inconvenience caused

Editor

# Gridsquare standings at 20 July 2005

Guy VK2KU

## 144MHz Terrestrial

VK2FLR	Mike	113
VK3FMD	Charlie	103
VK2KU	Guy	102
VK2ZAB	Gordon	78 SSB
VK3KAI	Peter	78
VK2KU	Guy	69 SSB
VK3CY	Des	68
VK3PY	Chas	68 SSB
VK3HZ	David	64
VK2DVZ	Ross	62 SSB
VK2TK	John	62
VK3EK	Rob	62 SSB
VK3XLD	David	55 SSB
VK2EI	Neil	54
VK3TMP	Max	53
VK3BJM	Barry	51 SSB
VK3ZLS	Les	51 SSB
VK3BDL	Mike	50
VK7MO	Rex	48
VK2DXE	Alan	47
VK2KU	Guy	47 Digi
VK3KAI	Peter	47 SSB
VK3WRE	Ralph	46 SSB
VK2DXE	Alan	43 SSB
VK3CAT	Tony	40
VK3KEG	Trevor	39
VK4TZL	Glenn	38
VK2TK	John	35 SSB
VK3KAI	Peter	35 Digi
VK4KZR	Rod	35
VK3ZUX	Denis	33 SSB
VK6HK	Don	33
VK3ZYC	Jim	31
VK7MO	Rex	30 SSB
VK4CDI	Phil	29
VK2KRR	Leigh	28 FM
VK3KME	Chris	28 SSB
VK4CDI	Phil	28 SSB
VK2TK	John	27 Digi
VK4DFE	Chris	26 SSB
VK5ACY	Bill	26 SSB
VK2TG	Bob	25 SSB
VK3BBB	Brian	25
VK7MO	Rex	25 Digi
VK3YB	Phil	23
VK2EAH	Andy	22
VK3HV	George	21 SSB
VK3TLW	Mark	20 SSB
VK6KZ	Wally	20
VK3AL	Alan	18 SSB
VK3BG	Ed	17 SSB
VK6KZ/p	Wally	16
VK3ZYC	Jim	14 SSB
VK2EAH	Andy	13 SSB
VK3DMW	Ken	13
VK2CZ	David	12
VK7ZSJ	Steve	12
VK2EI	Neil	11 Digi
VK2DXE/p	Alan	10
VK3ANP	David	10
VK2EAH	Andy	9 Digi
VK3UDX	Geoff	6 SSB
VK6DXI	Mirek	6
VK6HK	Don	6 Digi
VK2TWO	Andrew	5
VK3ZDR	David	5 SSB

VK2AKR	Neil	3 Digi
VK2DXE	Alan	3 Digi
VK4TJ	John	3 SSB
VK2AKR	Neil	1 SSB
VK3XLD	David	1 Digi
VK4CDI	Phil	1 Digi

## 144MHz EME

VK7MO	Rex	137 Digi
VK2KU	Guy	125
VK2FLR	Mike	114
VK3CY	Des	70
VK2KRR	Leigh	30
VK4CDI	Phil	16
VK3HZ	David	12
VK3KEG	Trevor	4
VK3FMD	Charlie	3
VK2DVZ	Ross	2
VK2DXE	Alan	2

## 432MHz Terrestrial

VK2ZAB	Gordon	57 SSB
VK3PY	Chas	50 SSB
VK3FMD	Charlie	47
VK3XLD	David	47 SSB
VK3ZLS	Les	40 SSB
VK2KU	Guy	38
VK2KU	Guy	34 SSB
VK3EK	Rob	34 SSB
VK3HZ	David	34
VK3CY	Des	32
VK2DVZ	Ross	31 SSB
VK3BJM	Barry	31 SSB
VK3KAI	Peter	29
VK3KAI	Peter	28 SSB
VK3BDL	Mike	26
VK3WRE	Ralph	26 SSB
VK3TMP	Max	25
VK3KEG	Trevor	21
VK2TK	John	18
VK2TK	John	17 SSB
VK7MO	Rex	17
VK3ZUX	Denis	15 SSB
VK3BG	Ed	14 SSB
VK3CAT	Tony	14
VK4KZR	Rod	14
VK3TLW	Mark	13 SSB
VK6KZ	Wally	13
VK2KRR	Leigh	11 FM
VK4TZL	Glenn	11
VK3AL	Alan	10 SSB
VK3ANP	David	10
VK3YB	Phil	10
VK2TG	Bob	9 SSB
VK3BBB	Brian	9
VK4DFE	Chris	9 SSB
VK3KME	Chris	8 SSB
VK4CDI	Phil	8
VK6KZ/p	Wally	8
VK2FLR	Mike	6
VK6DXI	Mirek	6
VK7MO	Rex	6 Digi
VK2KU	Guy	5 Digi
VK3HV	George	5 SSB
VK3UDX	Geoff	5 SSB
VK3KAI	Peter	4 Digi
VK3PY	Chas	4 Digi
VK3XLD	David	4 Digi

VK3ZYC	Jim	4 SSB
VK2CZ	David	3
VK2TWO	Andrew	3
VK2DXE/p	Alan	2
VK4TJ	John	2 SSB
VK2AKR	Neil	1 SSB
VK2TK	John	1 Digi
VK3DMW	Ken	1

## 432MHz EME

VK4KAZ	Allan	14 CW
VK3FMD	Charlie	5
VK3HZ	David	3
VK7MO	Rex	3 Digi
VK2KRR	Leigh	1

## 1296MHz

VK3XLD	David	35 SSB
VK3PY	Chas	34 SSB
VK3FMD	Charlie	32
VK2ZAB	Gordon	29 SSB
VK3ZLS	Les	26 SSB
VK2KU	Guy	25
VK2KU	Guy	22 SSB
VK3EK	Rob	20 SSB
VK3KWA	John	19
VK3KAI	Peter	17
VK2DVZ	Ross	16 SSB
VK3KAI	Peter	16 SSB
VK3WRE	Ralph	16 SSB
VK3BDL	Mike	12
VK3BJM	Barry	12 SSB
VK3TMP	Max	11
VK2TK	John	10 SSB
VK3HZ	David	10
VK4KZR	Rod	10
VK7MO	Rex	10
VK3TLW	Mark	8 SSB
VK3AL	Alan	7 SSB
VK3BG	Ed	7 SSB
VK2CZ	David	5
VK3HV	George	5 SSB
VK3ZUX	Denis	5 SSB
VK3ZYC	Jim	5
VK6KZ/p	Wally	5
VK2KRR	Leigh	4
VK3BVP	Shane	4
VK3YB	Phil	4
VK3ZYC	Jim	4 SSB
VK6KZ	Wally	4
VK2KU	Guy	3 Digi
VK3BBB	Brian	3
VK3KEG	Trevor	3
VK6DXI	Mirek	3
VK2DXE/p	Alan	2
VK2FLR	Mike	2
VK3CY	Des	2
VK3KAI	Peter	2 Digi
VK3KME	Chris	2 SSB
VK3XLD	David	2 Digi
VK4TJ	John	2 SSB
VK3DMW	Ken	1
VK3UDX	Geoff	1 SSB
VK3ZYC	Jim	1 Digi
VK4TZL	Glenn	1
VK7MO	Rex	1 Digi

continued next page

# Spotlight on SWLing

Robin Harwood VK7RH

## Talking Broadband

In last month's column, I mentioned that I was considering going over to Broadband from the normal dialup process. The telco I previously was with does not have capabilities for ADSL and I switched over to the major network, which was able to provide it. I am satisfied that everything has performed very smoothly with a permanent reliable connection and faster downloads. Of course I have to disconnect the modem if I want to do some serious listening yet most of the present "birdies" seem to come from the computer thought not as many compared to the recently retired Pentium 75.

And while we are on Broadband, our electricity monopoly here in VK7, announced in the first week in July that they are going to trial BPL around the capital city of Hobart. Fortunately the newspaper article in the Launceston "Examiner" also mentioned that there were serious concerns about possible HF interference to amateur radio operators, aeronautical and marine services and the defence forces. It also stated that the ACA had issued guidelines and was closely

monitoring developments. I know that hams down here are seriously worried about this BPL experiment, particularly in non-metropolitan areas away from telephone exchanges where ADSL is not available. It is also unclear whether BPL will be commercially viable as the same electricity monopoly unsuccessfully launched a rival telephone network in the 90s in competition to Optus and Telstra but it did not catch on. Will BPL go the same way? It is too early to say.

In late June, I was surprised to hear a station on a split channel, whilst tuning around for the BBC World Service on 9740. The propagation was not good on this morning and the Kranji relay was practically inaudible. There was a station on 9737 that I had not previously encountered. The program was in Spanish and seemed to be a sports program, probably a soccer match with a rapid-fire delivery. The announcer kept identifying as Radio Nacional so naturally I checked the Passport to World Band Radio listings. The only station listed on the channel was Radio Nacional de Paraguay although listed as

being inactive. However other monitors in the Americas were hearing the same station. Paraguay is a new country for me and the signal seems to be there daily particularly after the German station on 9735 signs off at 2100. It is best heard on LSB because of the BBC relay on 9740.

While I was compiling this month's column, my attention was distracted by images on the television of the London terror bombings. I was horrified to recognise the small private B&B in Russell Square that was only a few doors away from the Underground Station. In fact my first floor window overlooked the very street and where I dangled out some wire attached to my pocket transistor radio. Naturally only the strongest signals got through. I later discovered Bush House, the home of the BBC World Service was not far away. However it was impossible in those days to get in because of the threat of IRA attacks.

Well that is all for this month. My email address still remains vk7rh@wia.org.au. My snail mail is 20/177 Penquite Road, Norwood, Tas 7250.

ar

## Gridsquare standings continued

### 2.4GHz

VK3PY	Chas	11 SSB
VK3XLD	David	11 SSB
VK3WRE	Ralph	9 SSB
VK3FMD	Charlie	8
VK3KAI	Peter	7 SSB
VK3EK	Rob	5 SSB
VK3HV	George	4 SSB
VK6KZ	Wally	4
VK3BJM	Barry	3 SSB
VK3HZ	David	2
VK3KAI	Peter	2 Digi
VK4KZR	Rod	2
VK3BG	Ed	1 SSB
VK3TLW	Mark	1 SSB
VK3ZUX	Denis	1 SSB
VK4TZL	Glenn	1

### 3.4GHz

VK3FMD	Charlie	8
VK3WRE	Ralph	6 SSB
VK3KAI	Peter	5 SSB
VK3HV	George	4 SSB
VK3XLD	David	4 SSB
VK6KZ	Wally	4
VK3EK	Rob	3 SSB

### 5.7GHz

VK3FMD	Charlie	10
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VK3WRE	Ralph	9 SSB
VK3KAI	Peter	7 SSB
VK3XLD	David	5 SSB
VK6KZ	Wally	4
VK3BJM	Barry	2 SSB
VK3EK	Rob	2
VK3HV	George	2 SSB
VK6BHT	Neil	2 SSB
VK3KAI	Peter	1 Digi
VK3ZUX	Denis	1 SSB

### 10GHz

VK3FMD	Charlie	9
VK6BHT	Neil	9 SSB
VK3WRE	Ralph	8 SSB
VK3XLD	David	8 SSB
VK3KAI	Peter	7 SSB
VK3EK	Rob	5 SSB
VK6KZ	Wally	5
VK3HV	George	4 SSB
VK3PY	Chas	4 SSB
VK3TLW	Mark	3 SSB
VK3ZUC	Jim	3 SSB
VK5ACY	Bill	3 SSB
VK2EI	Neil	2 SSB
VK3BJM	Barry	2 SSB
VK3ZUX	Denis	2 SSB
VK7MO	Rex	2
VK3BG	Ed	1 SSB

VK3HZ	David	1
VK4KZR	Rod	1
VK4TZL	Glenn	1

### 24GHz

VK6BHT	Neil	3 SSB
VK2EI	Neil	2 SSB
VK3FMD	Charlie	2
VK6KZ	Wally	2

### 474Thz

VK7MO	Rex	1
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Additions, updates and requests for the guidelines to Guy VK2KU, vk2ku@tsn.cc, or by mail (QTHR 2005).

The guidelines (and the latest League Table) are also available on the website of the NSW VHF Dx Group at [www.vhfdx.radiocorner.net](http://www.vhfdx.radiocorner.net) - click on Gridsquares.

Next update of this table will be in early November 2005.

Stations who do not confirm their status for more than 12 months may be dropped from the table.

ar

## Contest Calendar August – October 2005

Aug	5	QRP Day Contest	(CW/SSB/FM/PSK31)
	6	TARA Grid Dip	(PSK/RTTY)
	6/7	10-10 Intl QSO Party	(SSB)
	13/14	Remembrance Day Contest	(CW/SSB/FM)
	20/21	Keymen's Club of Japan Contest	(CW)
	20/21	SEANET Contest	(CW/SSB)
	27	ALARA Contest	(CW/SSB)
	27/28	TOEC WW Grid Contest	(CW)
	27/28	YO DX HF Contest	(CW/SSB)
Sep	3	Russian Radio RTTY Contest	(RTTY)
	3/4	All Asian DX Contest	(SSB)
	10/11	Worked All Europe DX Contest	(SSB)
	24/25	CQ WW RTTY DX Contest	(RTTY)
Oct	1	PSK31 Rumble	(PSK)
	1/2	Oceania DX Contest	(SSB)
	8/9	Oceania DX Contest	(CW)
	10	10-10 International Day Sprint	(All Modes)
	15/16	JARTS WW RTTY Contest	(RTTY)
	16	Asia-Pacific Sprint Contest	(CW)
	16	RSGB 21/28 MHz Contest	(CW)
	29/30	CQ WW DX Contest	(SSB)

### Greetings to all Readers.

Last month my wife and I left Melbourne for VK4, as do many southerners, so that the Queenslanders call us the "Southern Invasion" or the "Grey Nomads". Apart from wanting to see any changes around Charters Towers/Townsville since I worked there in the 1980s, we also wanted to see towns that we missed 20 years ago and be warm!

I have heard operators talking as they roamed around Australia, but I have never given serious thought to how to equip with HF. Just getting 2 metres, UHF CB and a mobile phone into the modern car was bad enough, but HF?? – especially with my requirements of CW and contest logging..

It has been quite an operation, with somewhat limited success. The real challenge will be how to take a meaningful part in the RD Contest in the light of non-AC power supplies.

This reflects Life when you think about it – we take for granted our mod-

cons, but do we really need them? No!

I hope you have risen to the challenge of having your station in tip-top condition for the RD Contest and that you will do well. Please remember that every entry helps your State in its total score.

### RD Contest

I hope by now you will all have seen the changed rules for this year's event. Our new Contest Manager, Chris VK4AA, felt that some new life could be injected into the competition. I believe that with YOUR co-operation this can be achieved. One single revision may not be enough – there may be some anomalies which only operating will bring to light.

Again I stress that only by everyone's participation can we arrive at a satisfactory consensus on a new direction for this contest. As I said, I hope your station will be in tip-top condition and that you will make every effort to take part; however, do be careful of the various bonus points to be allocated. Certainly this will make for some extra effort in setting out your Log, but it

should not be too difficult, and you will be helping to change the face of the RD Contest for future years. Good luck!

### QRP Day

A contest with a difference is the annual QRP Day Contest, sponsored by the CW Operators' QRP Club of Australia.

The challenge is to operate at QRP levels, but it is not a requirement. Neither is the contest confined to the CW mode – please read the rules below, on the WIA web site <http://www.wia.org.au>, or on the Club web site <http://www.users.on.net/zietz/qrp/club.htm>

Give this one a go for an hour or so, and it's good practice for the RD the following weekend.

### ALARA

The other notable VK event this month is the ALARA Contest. Although organized by the ladies of our AR community, it is NOT a girls-only event. They are waiting for calls from OMs anywhere in Australia. Please make this a good year for them, too.

73 and good contesting,



# COQC QRP Day Contest 2005

0800z - 1200 UTC

Friday, 5 August

Sponsored by the CW Operators' QRP Club in Australia and open to all AR operators, the objects are --

1. to work as many stations as possible in each hour,
2. to encourage contacts between VK, ZL and P29 stations,
3. to encourage the use and enjoyment of low power equipment, whether commercial or home-brewed,
4. to test the efficiency of your station under QRP conditions,
5. to compete for a certificate for best hour and/or best three hours,
6. (in VK) to prepare for the Remembrance Day Contest.

Entrants are encouraged to compete for all four hours, but to submit their logs on the basis of "best three hours". Logs will also be considered for highest score in any individual hour.

SECTIONS: HF and VHF

CATEGORY: Single Operator only.

## HF

MODES: CW, SSB, PSK31, Mixed.

BANDS: All HF bands (no WARC) may be used, although it is envisaged that the bulk of operations will be on 80 and 40 metres.

EXCHANGE: RS(T) plus serial number beginning at 001 and incrementing by one for each contact.

REPEAT CONTACTS: In order to make greater use of available band space and time, repeat contacts with the same station will be allowed once each hour of the contest.

## Scoring:

Stations within VK/ZL/P29 score as follows --

VK-VK 1 pt ZL-ZL 1 pt P29-P29 1 pt  
VK-ZL 3 pts ZL-VK 3 pts P29-ZL 3 pts  
VK-P29 3 pts ZL-P29 3 pts P29-VK 3 pts  
Any DX stations (outside VK/ZL/P29) score 5 points.

A BONUS of 20 POINTS may be claimed if the QRP station operated with an homebrew transmitter or transceiver.

FINAL SCORE is the sum of the total QSO points, plus any bonus points. Except for the use of homebrew equipment (see above), no multipliers apply.

LOGS: PLEASE USE SEPARATE LOGS FOR CW, SSB, PSK31 or MIXED MODES. Logs must show full details of time UTC, station worked, band, mode, exchange and points claimed. Arrange logs so that each hour is clearly distinguishable. Logs should be submitted for "best three hours" and scores will be considered for highest score for each separate hour. Please indicate clearly if you claim the 20 points bonus for homebrew equipment (once only for the Contest).

CERTIFICATES: Certificates will be awarded to the following -

- (i) first three placegetters in each mode who submit "best three hours" entries,
- (ii) the highest scorer in each hour in each mode in each call area.

GENERAL:

- (i) A SUMMARY SHEET, showing operator's callsign, name, address and points claimed should accompany the Log.
- (ii) Any station claiming to operate QRP MUST NOT exceed a maximum of five watts carrier to the antenna and should add /QRP after its callsign.

SEND logs as below.

## VHF

BANDS: 6 metres, 2 metres and 70 cms.

MODE: FM only.

EXCHANGE: RS plus serial number beginning at 001 and incrementing by one for each contact.

REPEAT CONTACTS: In order to make greater use of available band space and time, repeat contacts with the same station will be allowed once each hour of the Contest.

SCORE: One point per contact.

LOGS: Entrants may use separate logs for each band if they wish, but this is not a requirement. However, please arrange logs so that each hour is clearly distinguishable. Logs must show full details of time UTC, station worked, band, mode, exchange and points claimed. Logs should be submitted for "best three hours" and logs will be considered for highest score for each separate hour.

CERTIFICATES: Certificates will be awarded to the following -

- (i) first three placegetters in each call area who submit "best three hours" entries,
- (ii) the highest scorer in each hour in each call area.

GENERAL:

- (i) A SUMMARY SHEET, showing operator's callsign, name, address and points claimed should accompany the Log.
- (ii) Any station claiming to operate QRP MUST NOT exceed a maximum of five watts carrier to the antenna and should add /QRP after its callsign.

SEND Logs and Summary Sheet by mail to --

Ron Everingham VK4EV,  
30 Hunter Street, Everton Park,  
Queensland, 4053, Australia.  
Logs may also be sent via email to  
vk4ev@bigpond.com

All entries to be received no later than Friday, 19 August, 2005.

## Clarification to RD 2005 Rules

12c to read:

12c. Contacts with any station within VK8, VK9 and VK0 (zero) P2 and ZL will also earn double points for both sides of each contact outside of their own area

# John Moyle Field Day Results

## Six Hour Portable Operation – Multiple Operator

Call Sign	Operators	Mode	Band	Score	Contacts	Award
VK5SR	Multi	Phone	All	2188	268	*
VK3AWS	Multi	Phone	All	1794	225	*
VK1YBQ	Multi	Phone	HF	340	170	*
VK3FRC	Multi	Phone	VHF	266	62	*
VK3APC	Multi	Phone	All	74	37	*
VK8DA	Multi	Phone	HF	25	18	*

## Six Hour Portable Operation – Single Operator

Call Sign	Operators	Mode	Band	Score	Contacts	Award
VK3ZPF	Single	Phone	VHF	1260	109	*
VK5OM	Single	Phone	VHF	1030	40	*
VK3JIY	Single	Phone	All	588	88	*
VK5AVQ	Single	Phone	VHF	302	17	*
VK6ZN	Single	Phone	HF	272	136	*
VK7TRF	Single	Phone	HF	96	48	*
VK4TGL	Single	Phone	All	84	20	*
VK1AI	Single	All	HF	70	35	*
VK2IRP	Single	Phone	HF	64	32	*
VK5VH	Single	Phone	HF	38	19	*
VK3HV	Single	Phone	VHF	2	1	*

\* Certificate Awarded

\*\* President's Cup

## 24 Hour Portable Operation – Multiple Operator

Call Sign	Operators	Mode	Band	Score	Contacts	Award
VK3CNE	Multi	Phone	All	5440	618	*
VK3ER	Multi	All	All	4966	272	*
VK2SRC	Multi	Phone	All	4548	488	*
VK3BML	Multi	Phone	All	2904	331	*
VK3QM	Multi	Phone	VHF	2473	197	*
VK5AR	Multi	Phone	All	2032	196	*
VK5BP	Multi	Phone	All	1934	387	*
VK4IZ	Multi	Phone	HF	1750	875	*
VK3GH	Multi	Phone	All	1720	307	*
VK4BAR	Multi	Phone	All	1444	252	*
VK5BAR	Multi	Phone	HF	652	326	*
VK4CHB	Multi	Phone	All	556	100	*
VK6XAA	Multi	Phone	HF	508	258	*
VK4WAT	Multi	All	All	484	235	*
VK4WIT	Multi	Phone	HF	180	90	*
ZL4AL	Multi	Phone	HF	134	67	*
VK4TWR	Multi	Phone	HF	112	56	*

## 24 Hour Portable Operation – Single Operator

Call Sign	Operators	Mode	Band	Score	Contacts	Award
VK3KYF	Single	Phone	HF	534	267	*
VK5OQ	Single	Phone	All	248	90	*
VK3UBM	Single	Phone	HF	232	116	*
VK3FPJ	Single	Phone	HF	200	100	*
VK7JGD	Single	Phone	HF	182	81	*
VK4EV	Single	All	HF	128	64	*
VK5MX	Single	Phone	All	112	52	*
VK3XBA	Single	Phone	VHF	51	36	*
VK3JS	Single	CW	All	76	40	**
VK2JHN	Single	Phone	VHF	44	4	*
VK5UE	Single	Phone	VHF	40	20	*

\* Certificate Awarded

\*\* President's Cup

## Home Station – 24 Hour

Call Sign	Operators	Mode	Band	Score	Contacts	Award
VK2KRR	Home			395	256	*

VK2ZQX	Home	144	86	*
VK2ZZF	Home	104	59	*
VK2CZ	Home	100	50	
VK4HTM	Home	83	51	
VK3KQB	Home	64	36	
VK2AKB	Home	44	26	
VK2DF	Home	37	23	
VK6NU	Home	34	20	
VK7HAY	Home	30	22	

## Home Station – 6 Hour

Call Sign	Operators	Mode	Band	Score	Contacts	Award
VK2FFG	Home			214	143	*
VK3KKS	Home			139	87	*
VK3JPP	Home			101	73	*
VK7VH	Home			80	57	
VK3BJM	Home			66	37	
VK4GZ	Home			65	42	
VK3UDX	Home			44	22	
VK2GR	Home			38	22	
VK8AV	Home			17	9	

Check Logs

Call Sign	Operators	Mode	Band	Score	Contacts
VK5JGM	Home				28
VK3CIS	Home				3

\* Certificate Awarded

## Comments on John Moyle Memorial National Field Day 2005

This year's entries came from every Australian mainland call areas and Tasmania. We also had two entries from across the Tasman from ZL. This was a change from last year's results.

There was a major mix up when some 15 logs were 'lost' when the IT staff decided that some e-mail IN Boxes were too large and when the results were initially announced a number of Hams – quite correctly – complained. I had not noticed that a complete directory had been deleted and so when the complaints were sent I investigated found a back up copy of the files – luckily. I have included all of the results that I received in total and if any are missing they are completely lost and I can only offer my apologies to anyone affected. This will not happen again as I have already put in place an alternative system. Again sorry if your log is missing.

Based upon submitted logs there were some 6841 contacts amounting to some 36279 points claimed. This was pretty heavy contesting but it resulted in only some 65 logs being submitted. Unfortunately the number of stations who went to the bother of going out and setting up as a portable station and then not bothering to submit a log as an entry was a disappointment. Perhaps we can put in a little bit more effort next year? Plenty of multiple operators got very big scores and perhaps a revision of the rules for large club stations is worth considering.

All portable stations that went to the effort to send in a log got a certificate. Largely due to the 'missing' logs, but once the decision was taken it is hard to reverse and I believe that people who made the effort to set up a portable station and operate should be acknowledged.

Activity was carried out on all bands permitted under the rules. (It is wondered if the additional WARC bands of 10, 18, and 24 MHz would make much of a difference? Perhaps a rule change might be in order here as the rules were initially drafted before these bands became available?)

# Over to you

## Pipes – more on dimensions

In trying to explain pipe sizes, Barry VK3BJM (OTU AR June 05), makes a fundamental error about pipe diameters.

Pipe sizes are designated by "nominal bore" (NB) sizes, but it is the outside diameter (OD) of a particular pipe size which is fixed, regardless of the wall thickness. This came about because in the days when steel was the only material available, pipes were joined to threaded fittings by threads cut on the outside of the pipes - the so-called "British Standard Pipe" thread (known as BSP). The OD of the pipe had to be constant so that threads cut on the outside of pipes of different wall thicknesses would always be the same. The dimension which does change with wall thickness is the bore diameter, and this is the reason the designation is given as "nominal bore"; ie, it is not a fixed dimension.

When plastic pipes came along, a socket glue-on fitting system was developed for end connections. Once

again the OD had to be fixed for a particular nominal bore pipe, so that the same glue-on fittings could be used regardless of the pipe's wall thickness. The outside dimensions of steel pipe were adopted for the new plastic pipe. When PVC pipe is used in pressure applications, thicker wall dimensions are required, resulting in smaller inside diameters. The system is designated GWS and the pipe is coloured white.

Typical sizes of GWS pipes and their ODs are:

- 3/4" (20mm) NB pipe is 27mm OD
- 1" (25mm) NB pipe is 33mm OD
- 1-1/4" (32mm) NB pipe is 42mm OD
- 1-1/2" (40mm) NB pipe is 48mm OD
- 2" (50mm) NB pipe is 60mm OD
- 2-1/2" (65mm) NB pipe is 75mm OD
- 3" (80mm) NB pipe is 89mm OD
- 4" (100mm) NB pipe is 114mm OD
- 6" (150mm) NB pipe is 160mm OD

Different OD dimensions were adopted for low pressure PVC sewer and vent pipes. Sewer pipe is designated DWV (drain, waste & vent) and the colour of the pipes and fittings is grey, though not always.

Typical sizes of DWV pipes and their ODs are:

- 1-1/4" (32mm) NB pipe is 36mm OD
- 1-1/2" (40mm) NB pipe is 43mm OD
- 2" (50mm) NB pipe is 56mm OD
- 2-1/2" (65mm) NB pipe is 69mm OD
- 3" (80mm) NB pipe is 82mm OD
- 4" (100mm) NB pipe is 110mm OD
- 6" (150mm) NB pipe is 160mm OD

Stormwater pipe follows an OD size designation for the smaller sizes but not for larger sizes; eg,

- 75mm pipe is 75mm OD
- 90mm pipe is 90mm OD
- 100mm pipe is 110mm OD
- 150mm pipe is 160mm OD

PVC conduit follows a metric system where the size is equal to the OD. So "25mm conduit" is 25mm OD exactly.

Confused? Well, VK3BJM suggested taking a micrometer (or vernier callipers) with you when buying PVC pipe and this is probably a good idea to ensure you get the pipe system and diameter you are seeking.

Peter Stuart, VK2BEU

**The views expressed in the *Over to you* column are those of the authors, and do not necessarily reflect the official policy of the Wireless Institute of Australia.**

## Contests continued

Band	UHF Contacts	Points	VHF Contacts	Points	HF Contacts	Points
10 GHz	4	120				
5.7 GHz	1	30				
2.4 GHz	8	104				
23cm	132	1536				
70 cm	735	7957				
2m			1229	16356		
6m			473	6687		
10m					316	628
15m					178	344
20m					1136	2231
40m					2916	5609
80m					1291	2470
160m					4	8
Total	880	9747	1702	23043	5841	11290

The participation across the Call Areas was patchy.

Call Area	Portable	Home	Total
VK1	2	0	2
VK2	3	8	11
VK3	16	6	22
VK4	8	2	10
VK5	10	1	11
VK6	2	1	3
VK7	2	2	4
VK8	1	1	2
ZL	1	1	2

One interesting observation from these results is that the weather was a possible explanation of the very poor turn out of portable stations in VK2.

It is certainly interesting when one considers the weather in a given call area.

Very few stations from VK2 ventured out to operate a portable station, with most (70%) deciding to operate from home. Maybe next year we can get a few more portable stations in VK2?

Comments were sent in by an equal number of contributors for and against the 3 hour block timing process. The likelihood is that the rule might well stay unless sufficient feedback can be collected either way.

The scoring on VHF may need a revision as the scores produced on VHF far exceed the scores on HF where the effort required to get a high score far out weighs the comparative effort on VHF.

Well done to all of those that participated in the contest and well done those who bothered to submit a log. It is hoped that the number of logs to be submitted next year might reverse the past trend?

Denis Johnstone (VK3ZUX)

af

## Finland

### Guinness World Record

Guinness World Records Ltd., has awarded a certificate to Jukka Heikinheimo, OH2BR, for a record number of contacts made by an individual from one location in one year. Operating as VP6BR from Pitcairn Island, Jukka made 56,239 contacts between 25 January and 21 April 2000. Jukka's achievement was noted in the Finnish national newspaper "Helsingin Sanomat"

(June RedCom)

## U.S.A.

### Ten-tec co-founder Al Kahn, K4FW, SK

Albert R. "Al" Kahn, K4FW, of Cassopolis, Michigan, died June 15. He was 98. An ARRL member, Kahn, with Jack Burchfield, K4JU, co-founded Ten-Tec following his retirement from Electro-Voice (E-V), which he'd also founded and served as president. Kahn continued his regular CW schedules until just a few days before he died. For those of you that have used an Electro-Voice microphone, or a Ten-Tec transceiver, you would be aware of Al's contribution to amateur radio. David Sumner, K1ZZ, CEO of the ARRL summed it in one sentence. "It's a sad day, but few of us will leave the sort of footprint that Al did during his long and productive life".

(ARRL)

## U.K.

### Pubs On The Air

Couldn't resist adding this into the column!

First there was IOTA, then SOTA. Now a couple of UK Amateurs have come up with the idea of a new interest group: PHOTA - "Public Houses On The Air." The mind boggles at the sort of reports that could be handed out. Imagine what the customers would be saying with someone calling "CQ PHOTA" with a pint in his hand!

(RSGB)

## Japan

### Restructuring: Japan goes Slow-code

Japan is going "slow code" rather than "no-code." for access by its radio amateurs to the High Frequency bands.

Japan's Ministry of Post and Telecommunications made the announcement of the changes on May 24th. The agency said that as of October 1st of this year, applicants for Japan's 1st and 2nd class licences need only pass a 5 wpm Morse test with two minutes of solid copy to attain full access to the H-F bands. Previously these two license classes required 12 and 9 word per minute Morse speeds respectively.

Also announced was that the code test requirement for a third class licence will be eliminated. It has required that an applicant pass a 5 word per minute Morse test. The very popular code free fourth class licence requirements remain unchanged.

## New Zealand

### Visiting?

Prospective visitors to NZ will be interested in a report by the NZART Administration Liaison Officer Fred Johnson ZL2AMJ that appeared in the March/April issue of "Break In". It says: "Visitors to New Zealand from any country who hold a current amateur licence in their home country may operate in New Zealand under conditions shown in a 'General User Radio Licence'. This licence and conditions are on the MED RSM web page for all to see. Again the maximum possible facility has been adopted by New Zealand. New arrivals becoming permanent residents and having overseas qualifications are treated on a case-by-case basis". See [www.med.govt.nz](http://www.med.govt.nz)

## New Zealand

### New President

Congratulations to Bruce Douglas, ZL2WP who was appointed President of NZART at their AGM held in New Plymouth in June. The appointment

is normally for two years which will give Bruce an opportunity to carry out his duties more fully. Also our congratulations go to John Lockead ZL4QS who was appointed Vice President.

## U.K.

### Falling in with CEPT

Technically qualified United Kingdom radio amateurs who hold that nation's Foundation or Intermediate licences cannot currently operate in other countries who are CEPT signatories. At this time only U-K Advanced holders are allowed to do that. But it looks as if this may be about to change. Work is currently underway to produce a CEPT Novice Radio Amateur Licence. When adopted this will allow operation in all the nations that are signed up to the pan-European CEPT licensing agreement. Let's hope our new proposed licences conform.

(ARNewline)

ar

## The North Queensland Amateur Radio Convention

16th, 17th and 18th  
September 2005

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Douglas Campus.

Townsville Amateur Radio

Club Inc

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vk4wit@wia.org.au

## Adelaide-Amman

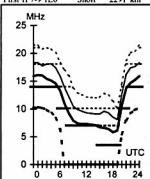
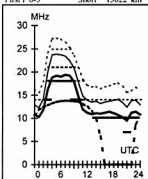
292

## Brisbane-Auckland

123

First F 0-5 Short 13022 km

First IF7-9 1E0 Short 2291 km



August

2005

T index: 22

## Legend

Frequency scale

Time Scale

## HF Predictions

by Evan Jarman VK3ANI  
34 Alandale Court Blackburn Vic 3130

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.

These frequencies as identified in the legend are:-

- Upper Decade (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit.

These predictions were made with the Ionospheric Prediction Service program: IASAPS Version 4

## Adelaide-Invercargill

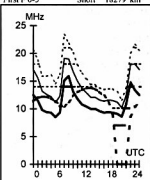
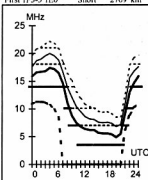
126

## Brisbane-Dakar

217

First F 0-5 Short 2769 km

First F 0-5 Short 18279 km



## Canberra-Lusaka

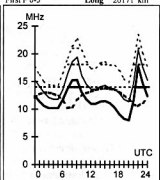
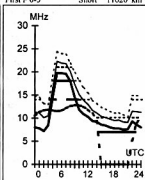
239

## Darwin-London

145

First F 0-5 Short 11620 km

First F 0-5 Long 26171 km



## Adelaide-New York

67

## Brisbane-Honolulu

49

## Canberra-Moscow

317

## Darwin-London

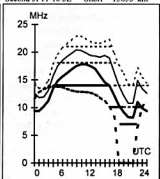
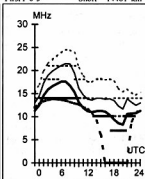
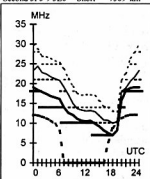
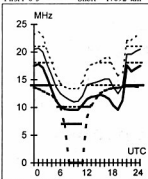
325

First F 0-5 Short 17092 km

Second 3F5-9 3E0 Short 7569 km

First F 0-5 Short 14481 km

Second 3F11-18 3E Short 13853 km



## Adelaide-Rome

296

## Brisbane-Singapore

293

## Canberra-Tokyo

352

## Darwin-Pretoria

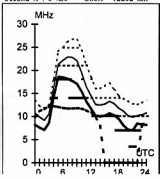
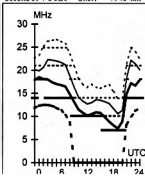
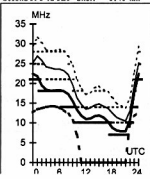
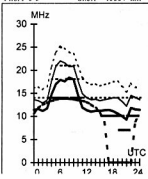
242

First F 0-5 Short 15337 km

Second 3F8-12 3E0 Short 6146 km

Second 3F4-8 3E0 Short 7948 km

Second 4F4-6 4E0 Short 12282 km





## New satellite from the Netherlands

At the time of writing a presentation on a new Dutch Amateur Satellite is planned for the AMSAT-UK International Space Colloquium, at the University of Surrey.

The July event will be over by the time you read this and hopefully more details of the Dutch presentation will be available next month.

Students from the Delft University of Technology in the Netherlands were to attend the event. They are currently building an amateur satellite called Delfi-3C which will carry a 70cm to 2 metre linear transponder and is scheduled for launch at the end of 2006.

Further information on Delfi-3C can be found at: <http://www.delfi3.tudelft.nl/> More news as the project matures.

## The long-awaited solar sail experiment

Long-awaited, yes, and unfortunately we'll have to wait a while longer. The spacecraft failed to go into orbit due to a malfunction of the second stage of the rocket. Faint signals were reported early on but they proved to be from other sources.

The solar sail was a project of the "Planetary Society" and details are available on their web site. [www.planetary.com](http://www.planetary.com). Maybe next time.

## Auto-doppler and LEOs.

As frequencies go higher and higher, users of linear SSB transponders on low-earth-orbiting satellites have to cope more and more with the difficulties of keeping their QSOs on frequency as the satellites travel first closer to and then away from their locations.

To make matters worse the station a particular operator is in contact with will be experiencing a different set of distances and rates of approach and recession.

In the past 'protocols' have been developed to cope with this situation. The most common protocol has been for stations in contact to agree to leave the receiver dial alone and keep themselves on frequency by tuning the transmitter dial as they are talking.

Another, possibly more effective way is to leave the dial alone on which ever of the two frequencies is lower and tune the higher one.

Of course these two methods are the same if the transmit frequency is the higher of the two. Lately some computer tracking programs have been written to partially or fully implement this or some other similar form of automatic Doppler tuning.

I've commented before in this column as to their effectiveness. On last month's AMSAT-VK net Roy VK4ZQ reported that he and several others had recently been trying out the automatic Doppler compensation capabilities of the tracking program SatPC32 on AO-51 and VO-52 and had found that it was possible to conduct an effective QSO without the hassle of continually fiddling with dials. This is good news and I'd urge you to download the program and have a go. The more operators trying this method the better as it will help everyone to "iron-out" any problems and could make operating these satellites even more of a pleasure.

## "S" mode down-converter

Every now and then a supply of ex-MDS or "wireless" type 2.4 GHz down converters becomes available and this affords the opportunity to get into mode-S relatively cheaply.

Tim VK2XTT recently posted a message on the AMSAT-BB to the effect that he had found a supply of such devices. If you've been contemplating a move to mode-S, have a look at Tim's web site at <http://vk2xtt.penneth.net/> The unit described is completely waterproof and includes a high gain patch/disc yagi as part of the package. Tim is investigating some slight mods to move the IF frequency a little closer to the normal coverage of current 70cm amateur transceivers. Updates will be posted on the site as they happen. I'll also try to keep you posted here as well.

My advice is to make up your mind quickly about one of these units if it takes your fancy as several times in the past when similar devices have been available, the source dries up fairly

quickly and a number of people miss out.

Commercially available down converters and mast head amplifiers tailored specifically for the amateur radio satellite band and for use with commercial ham transceivers are available but can cost many hundreds of dollars.

## SSETI Express on track for a launch this month.

Work on SSETI Express has now been completed and it has left the cleanroom at the ESA facility in the Netherlands.

At the time of writing the spacecraft is en-route to the launch site at Plesetsk in Northern Russia. The launch date is still listed as 25th August. Full details of the telemetry downloading and decoding software will be forthcoming soon.

AMSAT-UK will have a team member at the launch site during the launch campaign and intend to provide regular updates during the lead up to August 25th so keep a watch on the AMSAT-UK web site for the latest information.

## Suitsat project nears completion

Frank H. Bauer, KA3HDO holds the positions of ARISS International Chairman and AMSAT V.P. for Human Spaceflight Programs. Frank recently posted this message to the AMSAT-NA bulletin board. It concerns the hastily prepared "Suitsat" project.

"I am proud to announce that today (10th June) the ARISS-US team has delivered their portion of the Suitsat hardware to the NASA Johnson Space Centre.

NASA is in the process of shipping this hardware to Energia in Russia where it is expected to be certified and integrated with the Russian team's Suitsat equipment for eventual launch on the 19P Progress launch vehicle in the August/September 2005 timeframe.

The Suitsat amateur radio system, coupled with a school artwork DVD project that will be delivered later this month, is planned to be installed in an outdated Russian Orlon spacesuit in late September. It will then be deployed from the ISS during a spacewalk.

The Suitsat amateur radio system will beam down special messages and an SSTV image from within the Orion space suit as it floats in space. Suitsat radio system will allow hams and students to track the suit and decode special international messages, space suit telemetry, and a pre-programmed Slow Scan TV image through its specially-built digital voice messaging system and amateur radio transmitter. As built, Suitsat will be a transmit-only capability that will run on the space suit's battery power.

The idea for Suitsat was first conceived by the ARISS-Russia team, led by Sergey Samburov, RV3DR, and was extensively discussed at the joint AMSAT Symposium/ARISS International Partner meeting in October 2004. The project is being led by project manager A. P. Alexandrov and Deputy Project Manager A. Polshuk from RSC Energia, located in Korolev (Moscow area) Russia.

On the US side, the hardware project development was led by Lou McFadin, W5DID. Since October 2004 the Suitsat design concept matured and evolved

due to the challenging development time constraints. A joint NASA letter, allowing the ARISS team to proceed forward with the Suitsat project was signed on May 10, 2005. In the four short weeks since that letter was signed, the US project team, has designed, built and tested a simple, yet fully featured system that we hope will inspire hams and students around the world.

On behalf of the ARISS International team, I want to congratulate the Suitsat hardware development team for their "Can Do" spirit and ability to deliver the Suitsat hardware on such a very challenging schedule". Thanks Frank and our congratulations also go to the team. Nice work. This project, along with PCSat2 will concentrate a lot of interest on the ISS in the next couple of months.

Keep watching the AMSAT-NA web site and news services for further developments in all the above exciting and challenging projects.

ar

## The AMSAT group in Australia

The National Co-ordinator of AMSAT-VK is Graham Ratoliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an e-mail mailing list for breaking news and such things as software releases. Contact Graham if you wish to be placed on the mailing list.

## AMSAT-Australia Echolink Net

The net meets formally on the second Sunday of each month. Anyone with an interest in Amateur Radio Satellites is welcome to join in and take part. Graham VK5AGR acts as net controller. The net starts at 0600UTC and you can join in by connecting to the AMSAT conference server. All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK,  
9 Homer Rd,  
Clarence Park, SA. 5034

Graham's e-mail address is:  
vk5agr@amsat.org

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1-205



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• **4 Mobile Helicals**, 10, 20, 40, 80 m; 2 spring mounts; 1 long 20 m helical; 2 gutter grips; \$100 total; **Panasonic KX-P1180 Printer**, \$100; 2 x **FM-828A**, \$15 ea; 4 x **LDF4-50** female N connectors, new; \$15 ea; 8 metres **LDF5-50** coax, \$20; 6.5 metres **LDF 4-50** coax, \$10; **Roger Woodward**, VK2DNX, Rogerwoodward10@hotmail.com, 02 9547 2546.

• **Yaesu FT-707 HF rig**, GaAs FET modified front end and matching 20 A power supply. Good working order when last powered up a few years ago, \$600 ONO. **Werner Wulf 6 metre 5 el beam** \$100. **Steve VK2ZSC** 02 9626 7667.

• **Shack clearout: Kenpro KR-5600 Az-EI Controller** \$850. **Azden PCS-5000** 2 m xcvr \$450. **Kenwood TR-9130** 2 m all-mode xcvr \$300. **Icom IC-490** 70 cm all-mode xcvr \$550. **Kenwood TS-430S HF xcvr** \$450. **Alicino DM130MVZ** 20A power supply \$350. **Emtronics EPS-30** 25A power supply \$400. **Tono 5000E** keyer/modem \$600. **Icom IC-735 HF xcvr** & **AT-150 ATU** \$850. **Icom IC-505** 6 m all-mode xcvr \$450. **Icom IC-726 HF** & 6 m xcvr \$800. **Tokyo Hi-Power HL-160V** 2 m amp \$600. **Tokyo**

**Hi-Power HL-82V** 2 m amp \$250. **Emtronics EAT-300 ATU** \$300. **Home-brew** 10-160 m amp. 2 X 3-500Z tubes \$900. **Jumbo HP-240DX** 100W HF amp \$50. **Assorted audio oscillator, signal generator, spectrum analyser**. **VK2CAN**, phone 02 9871 4872.

## WANTED NSW

• **FT-290R sub board part number PB2236** Horrie VK2LY. Phone 02 9874 5050.

## FOR SALE VIC

• **Amateur Radio and Vintage Radio equipment**. Many items ex the estate of Laurie VK3KL. Amateur gear mostly Kenwood VHF and UHF transceivers, which are priced to sell at the Shepparton Communications Day 11th September 2005. Vintage radio equipment including Geophone 900 mm diameter loop antenna also for sale. **Rodney VK3UG QTHR** Phone 03 5825 1354.

• **Heathkit Test Equipment. Test Oscillator model TO-1. Resistance Capacitance Bridge model C-3U. Television Alignment Generator model TS-4A. Laboratory Oscilloscope model O-12U. GDO model GD-1B** c/w 7 coils. **Rod VK3AYQ QTHR** Phone 03 5243 2737.

• **Marconi TF2304 AM/FM fully automatic portable modulation meter**. Covers 9-12 and 18-1000 MHz. Inbuilt battery for portable use. Top condition with manual, \$330. Email for more details and pics. **Terry VK3ZXY QTHR**. email to vk3zxy@ieithy.com.

• **Satellite System: Brand New** all components in original cartons. 3.6 m **Orbitron Mesh**

**Dish with polar mount. 60 cm Actuator Arm. Echostar 8700 Analog Rc/Positioner with RF control. Chaparral Micropac 25 Degree C Band LNB and Feed Horn. 26 m RG-11, 26 m each of 3 core and 7 core control cable.** All instruction and assembly manuals. Buyer to collect. Inspection can be arranged. Originally cost \$2450, make a reasonable offer. **Contact Keith**, Phone 03 5243 518. **Geelong Radio & Electronics Society VK3ANR**

## WANTED VIC

• **Wanted urgently: B&W TV Turret Tuner type NT 3001** For Kriesler 79-3 B&W TV. Uses Valves 6BL8, and 6ES8. Please check your Junk Boxes. **Anthony VK3JIA QTHR**. Phone 03 9728 4305, or vk3jia@tpg.com.au.

## WANTED WA

• **Schurr Profi Iambic CW paddle**. Excellent condition. Wanted by enthusiastic CW operator. **Steve Ireland, VK6VZ**, Phone 08 9298 9330, email: vk6vz@arach.net.au.

## WANTED TAS

• **3-500Z tubes**, prefer pair but will consider all. Reply to VK7ZOO on Phone or fax 03 6376 1419.

## MISCELLABNEOUS

• **The WIA QSL Collection requires QSLs**. All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, **Ken Matchett VK3TL**, 4 Sunrise Hill Road, Montrose Vic 3765, tel. (03) 9728 5350

## About hamads....

- Hamads may be submitted by email (preferred) or on the form on the reverse of your current Amateur Radio address flysheet. Please print carefully and clearly, use upper AND lower case.
- Separate forms for For Sale and Wanted items. Please include name, address STD telephone number and WIA membership number if you do not use the flysheet.
- Deceased estates Hamads will be published in full, even if the ad is not fully radio equipment.
- WIA policy recommends that the serial number of all equipment for sale should be included.
- QTHR means the address is correct in the current WIA Call Book.
- Ordinary Hamads from those who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.
- Commercial advertising (Trade Hamads) are pre-payable at \$25.00 for four lines (twenty words), plus \$2.25 per line (or part thereof), Forty word maximum, minimum charge of \$25.00. Cheques are to be made out to: WIA Hamads.
- Copy typed or printed clearly please, and received by the deadlines shown on page 1 of each issue of Amateur Radio.

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- MFJ-259B Antenna Analyser - \$440
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- MFJ-264 1.5kw HF/VHF/Deluxe Dummy - \$149
- MFJ-250 1.5kw HF/VHF/Deluxe Load - \$105
- MFJ-993 300W AUTO ATU - \$585
- MFJ-986 3KW Roller Inductor ATU - \$595
- MFJ-962D 1.5KW Roller Inductor ATU - \$490
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	Unused	Used
Icom 706MK2G	Ring/email	\$1199
Icom 208H	\$550	\$499
Icom 910H	\$1999	\$1699
Icom 756PRO2	N/A	\$2799
Icom 756PRO3	\$4499	N/A
Icom 703	N/A	\$799
Kenwood TS2000	\$2699	\$2299
Kenwood TS2000X	\$3599	N/A
Kenwood TS480SAT	\$1899	\$1599
Kenwood TS480HX	\$1999	\$1699
Kenwood TMD700A	\$849	\$799
Kenwood THD7A	\$599	\$549
Yaesu FT8900R	\$699	\$649
Yaesu VX7R	\$579	\$529
Yaesu VX5R	\$429	N/A
Yaesu FT1000MP MKV	\$3599	\$3199
Yaesu FT1000 Field	\$3199	\$2799
Yaesu FT847	N/A	\$1799
Yaesu FT857D	\$1249	\$1149
Yaesu FT100D	N/A	\$1199

## ACCESSORIES:

Doss 40 AMP PSU	\$225	N/A
Icom AH4 ATU	\$489	\$425
Icom AT180	N/A	\$499
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Computer interfaces	\$75	N/A
Spare Power cables	\$34	

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## Over to you

### WIA Membership costs

Great to see new WIA membership category introduced for family membership. But when the WIA changed to a national body the idea was to make the unit more streamlined cost effective and reduce costs to members. Yet the fees increased for the pensioner.

Previously \$55.00 covered full membership, magazine and use of the QSL section. Now I pay \$70.00 membership (with magazine) plus \$20.00 to use the W.I.A QSL section (Vic branch) for the next two years. I know of members dropping out of the WIA because of these increases, and believe it could become wide spread if these type of increases continue.

Alan VK3VD

tfolstne@melbpc.org.au

### The other side of the Tasman in the 160 m contest

This e-mail, was sent to me after the 160 m Contest, held 9th July.

*Hello there*

*Just a wee note to say that our ZL2AS team had a great weekend operating in this 160m ZL - VK Event and thank you. Our log of 189 (over 6 hrs), contacts will follow soon.*

*For the record we had 3 operators (using NZART Br 13 callsign of ZL2AS) at our remote site (10 km from mains power at Cape Kidnappers, east of Hastings on the east coast of the Nth Island) and ran our 100 W from batteries only.*

*We had a rope suspended across a ½ km valley and attached our 240 m long collinear antenna to the rope. The rope was anchored on one hill top and the other end ran through a pulley on the other hill top and back down the side of the hill to a vehicle, we fitted the antenna to the rope and drove the vehicle away and up went the antenna, about 35m above the ground.*

*Tnx again and good luck to every participant.*

*73 from the "ZL2AS Team" (David ZL2DW, Mike ZL2VM, Colin ZL2CF)*

**Bruce Renn VK3JWZ**  
Contest Manager

**The views expressed in the *Over to you* column are those of the authors, and do not necessarily reflect the official policy of the Wireless Institute of Australia.**

## Silent key

### Reginald Talbot Busch VK3LS

**28 1 1907 to 11 6 2005**

Reg was born 29 January 1907 and lived his life in the North Western suburbs of Melbourne Moonee Ponds and Strathmore, after he married Hilda.

Amateur Radio licence VK 3 LS was gained in 1923 and he held this call all his life. As a member of the Air Force Wireless Reserve before the 1939 war, he volunteered at the outbreak of the war, but as he was an Engineer (Communications) with the State Electricity Commission he was classified Reserved. However he still served for the R.A.A.F. and taught Radio Theory at the Working Men's College (Now R.M.I.T.) part time.

Reg helped with the establishment of the Amateur Radio Emergency Network (precursor of W.I.C.E.N.) which was formed about 1950, the time of the big floods in the Hunter Valley N.S.W. This network operated BELOW the 40 metre Amateur Band

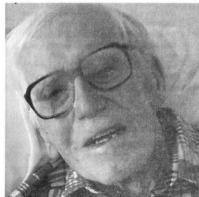
An Honorary Member of the I.R.E.E.

and Honorary Member of the W.I.A. this certificate adorned the T.V. in his nursing home room. He served as Treasurer of the Victorian Division Of the W.I.A. about the time they shifted from Victoria Street Offices and was very diligent in these operations.

As an enthusiastic operator he built much equipment right up to the time of his death. One such unit was the Dick Smith Explorer 433 Meg transceiver and he was trying out a new 433 Meg antenna as late as December last year.

He was also a regular operator on the early morning 144 net in the Coburg area, which was held every day. He enjoyed the contacts as he lived alone for the last years of his life after Hilda, passed away and they had no children. His two nephews and families Ray & Alan Horsley will miss him greatly.

He had a fall just after his 98th birthday and entered John Faulkner Hospital from



Reg Busch VK3LS at the age of 98

where he transferred to the Roxburgh Nursing Centre. When visited he would still be enthusiastic about radio and liked to remember the good old days. He passed away quietly on Saturday 11th June 2003.

73 Reg from VK3SM, Allen, VK3NP, Don, VK3BKN, Jack and VK3BYE, Len. The remaining members of our net.

**Allen VK3SM**

# DXCC standings

Mal. VK6LC

(335 entities) (30th. June. 2005)

Callsign	Countries	Callsign	Countries	Callsign	Countries	Callsign	Countries
<b>DXCC Ex.(335)Phone</b>		<b>General listing-Phone</b>		<b>General listing-CW</b>		<b>General listing-Open</b>	
VK5MS	335/389	VK8DK	253/254	VK6RZ	315/320	VK4ICU	311/313
VK4LC	335/382	VK2FHN	243/000	VK3AKK	312/317	VK6LC	309/312
VE6VK	335/372	VK4AO	240/000	VK3KS	307/335	VK3DP	305/308
VK4UA	335/370	VK8KTC	231/233	VK4LV	299/306	DL1TC	302/303
VK5WO	335/368	UA6LDD	225/226	CT1EEN	294/000	VK7TS	295/296
VK6LK	335/360	VK8AM	225/000	VK4ICU	291/000	PY2DBU	294/298
VK3AMK	335/354	VK4IL	212/000	VK3JI	274/299	VK3KE	292/295
VK3QI	335/349	VK2JAU	210/000	VK6MK	249/252	VK2HV	289/000
VK3AKK	335/348	VK3DVT	206/209	VK7BC	246/255	VK3CIM	284/288
VK2FGI	335/341	VK6BH	200/000	VK2CWS	245/247	VK6ANC	283/287
VK3DYL	335/341	VK2EO	195/000	VK3DP	245/247	UA6LDD	279/280
VK3EW	335/341	VK6RZ	187/190	VK4DA	237/239	VK3VQ	276/293
VK3SX	335/341	VK7JAB	186/000	VK3CIM	235/236	VK3JMB	259/000
<b>Honour Roll(326)Phone</b>		GOVXX	184/000	RD3AF	233/000	VK6MK	256/259
VK6HD	334/360	VK3PA	178/179	VK7TS	219/000	VK8NSB	256/000
VK6NE	333/349	VK6EH	170/000	DL7PA	203/000	VK5UO	251/255
VK2AVZ	333/344	VK2EJK	169/000	VK6RO	196/198	VK2CWS	251/253
VK1ZL	333/339	VK4CHB	167/168	PY2DBU	179/181	VK2FHN	247/000
VK2DEJ	333/339	VK2BQS	166/169	VK3KE	176/000	VK4DA	237/239
CT1EEN	332/336	VK5EMI	160/000	VK4CXQ	174/000	VK8AM	236/000
VK3TZ	332/336	VK4ARB	159/160	VK5UO	171/172	DL6USA	190/000
VK3OT	331/345	JA6KTY	156/000	DK6AP	168/000	VK3PA	187/188
VK4OH	330/337	DL6USA	153/000	VK4UA	151/164	VK2BQS	183/186
VK6APK	330/335	VK2GSN	152/000	DL6USA	151/000	VK4CXQ	179/000
VK4AAR	330/334	VK6HZ	151/000	VK4AAR	144/146	VK4CHB	177/179
VK3CSR	329/338	VK7LUV	148/000	VK8AM	138/000	DL6UGF	161/000
VK3YJ	327/333	VK2SPS	143/145	N0TM	135/000	VK5ATU	158/160
VK5FV	326/329	VK2QV	141/000	DL1TC	133/000	VK3VB	153/155
<b>General listing-Phone</b>		VK3JXO	141/000	VK7DQ	131/132	VK6HZ	151/000
VK4SJ	325/326	VK8LC	137/000	DL6UGF	126/000	DL9UBF	150/152
VK7BC	324/329	OK1ZSV	136/000	DJ4BG	121/000	VK3JXO	146/000
EA3AKN	323/331	DL9UBF	133/134	K5QNM	110/113	VK2SPS	144/145
VK3EUZ	323/324	SV1XV	130/131	VK5BWW	110/113	SV1XV	142/144
VK6ABS	322/000	VK4FNQ	130/000	SM6GZN	110/111	VK4EZ	140/147
VK2UK	320/325	VK4VUS	127/129	T94VT	108/000	ON9MCR	129/140
VK4LV	319/321	VK5ATU	126/128	UR5BCJ	103/105	VK3OZ	126/127
VK1TX	319/000	VK2IRP	125/101	DL3GDS	102/000	VK7CQ	123/125
VK6RO	312/319	CU3AAT	125/000	<b>DXCC Ex.(335)Open</b>		N0MSB	117/000
VK3JI	310/325	TG8NE	125/000	VK4LC	335/382	VK9RS	111/000
PY2DBU	308/315	VK2VZQ	122/000	VE6VK	335/380	VK2AJE	109/000
VK6LC	308/311	VK4EZ	119/125	VK4UA	335/372	VK3MRG	109/000
VK4ICU	303/305	VK2MH	116/118	VK5WO	335/372	UA0IGV	103/000
VK6DY	297/301	VK5UO	112/115	VK6HD	335/362	RA3BZ	100/000
JA3EY	296/300	VK3CML	109/000	VK3AMK	335/354	<b>General listing-RTTY</b>	
VK4EJ	296/298	VK3MRG	108/000	VK3QI	335/350	VK3EBP	253/255
DL1TC	294/295	AX4EJ	105/000	VK3AKK	335/348	VK3AMK	200/202
VK2CSZ	290/293	SV1EOS	105/000	VK3EW	335/341	VK3KE	163/000
VK2HV	288/000	VK9RS	104/000	<b>Honour Roll(326)Open</b>		VK2BQS	126/128
VK4BAY	287/290	3W2LC	102/000	VK3OT	334/348	SP3CUG	124/000
VK7TS	285/286	SV1FTY	102/000	VK7BC	334/343	CT1EEN	110/000
9V1RH	283/285	SV1GYG	102/000	VK2AVZ	333/344	VK5RY	100/102
VK3KE	282/285	VK6ISL	102/000	CT1EEN	333/337	<b>Gen-listing 6m. Open</b>	
VK6ANC	281/285	VK3KTO	101/102	VK3UY	333/336	VK4FNQ	137/000
VK3DP	274/277	HS1NGR	101/000	VK2UK	332/337	CT1EEN	110/000

VK2CA	271/000	VK1PRG	101/000	VK4AAR	332/336	VK4ABW	109/000
VK3UY	264/266	VK5JAZ	100/000	PY2DBU	328/343	VK6JQ	103/104
VK3VQ	261/278	DXCC Ex.(335)CW		General listing-Open		VK4CXQ	101/000
JA7MGP	260/000	Honour Roll(326)CW		VK4LV	323/331	Gen-listing-Satellite	
VK2XH	257/000	VK6HD	334/355	VK6RZ	323/329	VR2XMT	112/114
VK8NSB	255/000	VK3QI	334/346	VK3JI	322/351	VK3XDQ	106/000
VK3JMB	255/000	VK5WO	332/348	VK6RO	321/328	General listing-SWL	
VK3CIM	254/258	VE6VK	329/356	VK4DV	314/329	DE2DAD	100/000

Awards information and down loadable files are available on our WIA website <http://vk6.net/WIA-Awards/HTML/01-wia-awards-index-home.html> or email to: [awards@wia.org.au](mailto:awards@wia.org.au) or W.I.A. Awards Manager P.O.Box 196, Cannington, Western Australia. 6987. Mal. VK6LC

## Award

# The Fathers of the Radio

Erminio Cioffi Squitieri

## Rules

The section ARI of Sala Consilina (SA) ITALY, has founded the permanent award "The fathers of the radio". The purpose of the diploma is to recognise the names and the work of those who before, during and after the Our Guglielmo Marconi contributed to the invention and the development of the Radio.

General requirements - Awards are available to all amateurs and SWLs for worked or heard all the 11 countries of the following list where were born the scientists/inventors who have contributed to the invention or the development of the radio.

Bands and Modes - All the bands assigned to the Radio Amateur Service and all the modes are allowed, satellites and WARC included.

There are 4 versions of the award:

- 1) HF (you must have contacted all the 11 countries)
- 2) 50MHZ/VHF/UHF (6 countries are enough)
- 3) SATELLITE (6 countries are enough)

## Countries list:

Canada VE (Reginald Fessenden)  
 Croazia 9A (Nikola Tesla)  
 Denmark OZ (Hans Christian Orsted)  
 France F (Edouard Branly)  
 Germany DF-DK-DL-DM (Heinrich Rudolf Hertz - Karl Ferdinand Braun - Adolf Slaby)  
 India VU (Jagdish Chandra Bose)  
 England G-M (Michael Faraday - Oliver Lodge)  
 Italy I (Guglielmo Marconi - Augusto

Righi - Temistocle Calzecchi Onesti - Luigi Galvani)

Russia RA-RZ UA-UZ ( Aleksandr Popov)

Scotland GM (James Clerk Maxwell)  
 USA A-K-N-W ( Samuel Morse - David E. Hughes - Lee De Forest - Nathan Stubblefield)

To claim the Award the QSL cards are not required but they must be in possession of the applicant and could be requested anytime for checks.

The fee is 10 Euro or 12 Dollars. To

receive the Award as registered mail please add 3 Euro or 4 Dollars.

Application forms must be sent to this address:

Ari Sezione Sala Consilina  
 Casella Postale N.11  
 Cap 84036 Sala Consilina (Sa)  
 Italy

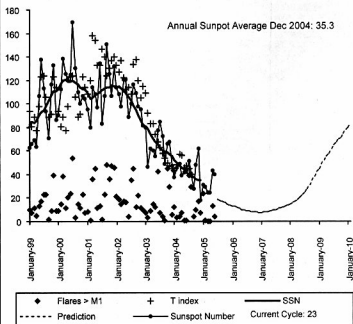
For more information you can contact the award manager IZ8AJQ Erminio via email: [iz8ajq@amsat.org](mailto:iz8ajq@amsat.org) <mailto:iz8ajq@amsat.org>

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## Sunspot Numbers

Monthly Sunspot Average Jun 2005: 39.6

Annual Sunspot Average Dec 2004: 35.3



Drawn from data provided each month by the Ionospheric Prediction Service

## QSLing—an activity that goes back to the very roots of amateur radio

Is it a chore or a pleasure? It comes down to how active you are and if you are interested in obtaining confirmation of some or all of your contacts.

The major DXpeditions these days produce interesting QSL cards containing a lot of local information with some excellent photographs. A far cry from the attempt by a well known DXpeditioner in the late 1960s to cut down on the amount of incoming paper, and the necessity of printing cards, decided to literally 'rubber stamp' the incoming card confirming the contact and returning the card to sender. It was far from popular and soon stopped! But then that raises the question 'what do we want the QSL card for?' If it is just to get confirmation for DXCC then does the quality or type of card really matter? With the introduction of L.O.T.W. will the need for QSLs eventually disappear? I think not.

In recent years the whole concept of QSLing has changed. Some DXpeditions will accept (actually encourage) email requests for QSLs, which are then sent via the bureau saving the handling of incoming paper and the expense of sending, and including reply paid postage. Others print out all the QSLs — extract the direct requests and then after a period of say 9 months put the residue into the bureau. Note the role of 'The Buro'. This gives me an opportunity to say 'thank you' to all those volunteers who process our cards for us, the magic 'they' who sort QSLs for us.

## Now to DX News

**The CY9SS St Paul Island DXpedition** commenced on time after a very difficult start. The landing by the CY9SS crew on St. Paul Island was, to quote Robby VY2SS, "very, very rough", so rough they lost a generator and three tower sections overboard during landing. All the operators at that time were OK other than being cold, wet and tired. The boat captain, Robert, hurt his leg during the landing and was in much pain, but managed to get all gear unloaded. High winds and rain hampered efforts to set up camp. K1LZ, Krassy, broke a leg.

He had to be airlifted to Cape Breton Regional Hospital in Sydney, Nova Scotia. The accident happened while installing a 160 m antenna. A tower guy let loose while Krassy was on the tower and he fell 50 feet. In addition to the leg break above the knee near the hip Krassy had slight concussion. Krassy's other leg was also severely bruised and he has been immobilized so things can heal, but doctors are optimistic about his recovery.

Alan VK6BN emailed to say that he returned to Australia on 11th May after three years of activity as SU9BN from the **Sinai, Egypt**. His QSL Manager is Fran EA7FTR. Thanks Alan.

The **Peter I DXpedition** is now scheduled for early 2006. Contracts have been signed with two Chilean companies to provide a vessel and helicopter for the DXpedition during January/February 2006. The actual dates of the operation will be released about September 1, 2005, but the general time frame will be between January 16 and the end of February, 2006. The actual dates depend on the vessel scheduling and weather considerations.

It is the team's objective to be at Peter I for at least two weeks, the actual operating time to be determined by weather and set-up time. Because of the likelihood of it being a long time before Peter I will be activated again, they have set some very high QSO goals.

Nine stations will be established on the island and QRV on all bands 160-10 m, on the most common communications modes.

Most of the members of the 2005 team will participate in the 2006 DXpedition, but there are several slots available for new team members. Contact either: K4UEE (mallphin@aol.com) or K0IR (rfedor@cloudnet.com) for more information. This adventure is not for the faint-hearted!

Sponsors from the 2005 attempt are on board for 2006 - see [www.peterone.com](http://www.peterone.com) for a complete list.

Email from **Allan Greening VK3PA** has drawn my attention to a monthly report of DX worked and heard on 80

metres. Allan suggests the best time to check is the last day of the month at [www.VK3PA.com/forum](http://www.VK3PA.com/forum). Many thanks Allan.

Harry 7Q7HB is once again in **Malawi** for about three months. He has a heavy work schedule and will operate in his spare time. Note: direct QSLs only to G0IAS.

Tony IK8VRH reports he has changed his plans for his August **IOTA** activity from **Greece**. He now expects to operate as SV/IK8VRH from the following islands and lighthouses:

10-12 August	Kavalliani	EU-060
13-14 August	Dokos	EU-075 (ARLHS GRE-059)
16-17 August	Elafonisos	EU-113
19-20 August	Sapientza	EU-158 (ARLHS GRE-116)
21-28 August	Spetses	EU-075 (ARLHS GRE-063)

F6FVX will be active as TY/F6FVX from **Benin** between 13th August and 6th September. He will operate on the HF bands and will be speaking French.

PY0F/EA2RC and PY0F/CT1BWW will active from **Fernando de Noronha** (SA-003) from 1st August to 14th August.

Further information can be found at <http://www.geocities.com/EA2RC/index.htm>

The DXpedition to **Jagoi Gunung**, a Dayak village in Sarawak by Sengchai Chan 9M8SC, planned for June has been postponed until 31 August.

Don't forget the planned trip to **Kure** KH7C from September 24th to 8th October. Four stations will be active. Operators will be KK6EK, N16T, N6MZ, N0AX, N7CQ, W6KK, DJ9ZB, I8NHJ, K6SRZ, K6DZL.

Comments, news and views please by September 8th for October *Amateur Radio*.

Special thanks to the authors of -- *The Daily DX* (W3UR), 425 *Dx News* (I1JQJ) and *QTC DX* PY2AA for information appearing in this month's *DX News & Views*.

# NIUE: Dxer's Delight

or:

## How to have a DX adventure while enhancing marital bliss

Murray Lycan, VE7HA

As I surfed the Internet one day, spending extra time at one of my favourite websites [www.dxholiday.com](http://www.dxholiday.com), I called to my wife: "Konomi, how would you like to lounge at a tropical bungalow and eat papaya while I operated Ham radio"? After 19 years of marriage, I know how to get a reaction from my wife.

"We can pop down to the Caribbean for just US\$1600 a week to stay at a house with Ham radio plus US\$2000 airfare plus transfers, plus food ....." I added. My voice trailed into silence since I wasn't even convincing myself this was a viable idea at these prices. For a single week of tropical glory, this was going to cost me more than a brand new Alpha 99 amplifier. No reply from Konomi. I thought I better shut up in case she actually thought this was a good idea. There has to be a better way, I thought, that is affordable yet provides the tropical sun my wife loves and me the opportunity to operate from a spot high on the DX Most Wanted List.

Another website stated boldly: "Niue offers you the chance to experience your dreams". I knew about Niue ZK2 but I had always thought it was difficult to reach since it isn't on the main airline routes. Besides, everybody must have worked ZK2 by now. But as I checked further, I discovered Niue is a quick non-stop jet flight of about three hours from Auckland. Plus Niue was actually quite high on the list of DX wanted entities especially in Europe since there are virtually no active resident Hams.

Over the weeks following, I learned a great deal about Niue. I learned Niue is the only country that offers free wireless Internet access to all residents and visitors. I learned that a Ham licence can be obtained on

**Without exaggerating, Niue may be one of the best locations overall to visit for a Ham interested in being on the other side of the pileups, while simultaneously satisfying a travel partner who may not have the same appreciation for DXing as yourself.**

the spot for a modest NZ\$20 payment plus presentation of a valid home licence. No hassle; the telecom authorities even allow some choice of callsign. I chose ZK2HA to match my home call suffix. I learned that accommodation, though

not plentiful, is adequate for the number of visitors to the island and varies from resort class accommodation to cozy bungalows. And prices are particularly reasonable, especially for a longer stay. Equally important to me, every email that I sent to different Niue businesses with inquiries was answered promptly, politely and with a friendly inviting tone. Too good to be true in Year 2005?

As I write this after spending five weeks in Niue, I can confirm that everything mentioned above is true. Without exaggerating, Niue may be one of the best locations overall to visit for a Ham interested in being on the other side of the pileups while simultaneously satisfying a travel partner who may not have the same appreciation for DXing as yourself. Our time spent in our comfortable Namukulu Motel bungalow was really like a home away from home with hosts Robin and Joe Wright taking care of any need we had. If you do happen to go to Niue, take along a bottle or two of tonic water, pass them to Robin and Joe, and tell them they're from me. They'll understand.

Though our five weeks on island were spent casually offering QSOs to the deserving operators to the other activities, each time I fired up the TS-690S with only 100 watts and a Steppir BiggIR vertical attached, I quickly became buried under a pileup. A lot of operators still want ZK2! And this was

on SSB. Judging from emails received, operations on CW, PSK, RTTY, etc. are even more in demand. An operator with a bit of transmit power and a little antenna gain would be very busy for as long as they wanted. As for contest

operating, I personally experienced the big gun multi-multis calling me (for a change) and expressing their gratitude for the new multiplier.

My one mistake I made was not realizing in advance the intensity and desire that many Hams around the world have to get a QSO with ZK2. Next time I visit ZK2, I will go better prepared equipment-wise and personally psych myself up to meet this demand.

When not playing radio, we enjoyed visiting Alofi that is the town where the 1300 full-time Niuean residents obtain their supplies, work at their jobs and meet friends. With our rental car, we explored all sections of the island via the paved road that circumnavigates the country. Even though some evidence can be seen of horrific Cyclone Heta that struck in January 2004, most damage has either been repaired now or is in the process of being repaired. An example of this is the new hospital under construction to replace the storm damaged old hospital. A visitor is not inconvenienced any longer by the destruction delivered by that nightmare storm.

If you are looking for a holiday destination that will satisfy the wife, the kids, literally anybody in your family plus give you the opportunity to enjoy being DX from an electrically quiet paradise without pushing you into bankruptcy, visit [www.niueisland.com](http://www.niueisland.com) and ask yourself: "Why not us"?

**ar**  
*Murray Lycan, VE7HA (ex-7J1AQH) has been licensed for over 33 years and has operated from 12 different countries. He and wife Konomi enjoy asking the question: Where do we go next? For now, the answer is to the Sunshine Coast of British Columbia to a new log home equipped with a good Ham station that will allow a contact with needed ZK2. Feel free to send any questions regarding operating from ZK2 to Murray at [ve7ha@arrl.net](mailto:ve7ha@arrl.net).*





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